The
JOURNAL
of the AMERICAN
OSTEOPATHIC ASSOCIATION

Apr. 1958

Diseases of the cardiovascular system

Editorial: The osteopathic situation and effective communication

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By EMIL NOVAK, A.B., M.D., D.Sc. (Hon. Trinity College Dublin; Tulane), F.A.C.S., F.R.C.O.G. (Hon.), Late Assistant Professor Emeritus of Gynecology, The Johns Hopkins Medical School; Gynecologist, Bon Secours and St. Agnes Hospitals, Baltimore; Fellow and Past President, American Gynecological Society; and EDMUND R. NOVAK, A.B., M.D., Assistant Professor of Gynecology, The Johns Hopkins Medical School; Gynecologist, Johns Hopkins, Bon Secours, Hospital for the Women of Maryland, and Union Memorial Hospitals, Baltimore, Maryland. 650 pages, 6½" x 9¾", with 683 illustrations, 25 in color. $14.00. *New (4th) Edition!*

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Reference: 1. J.A.M.A. 158:386 (June 4) 1955.

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April 1958 Vol. 57, No. 8

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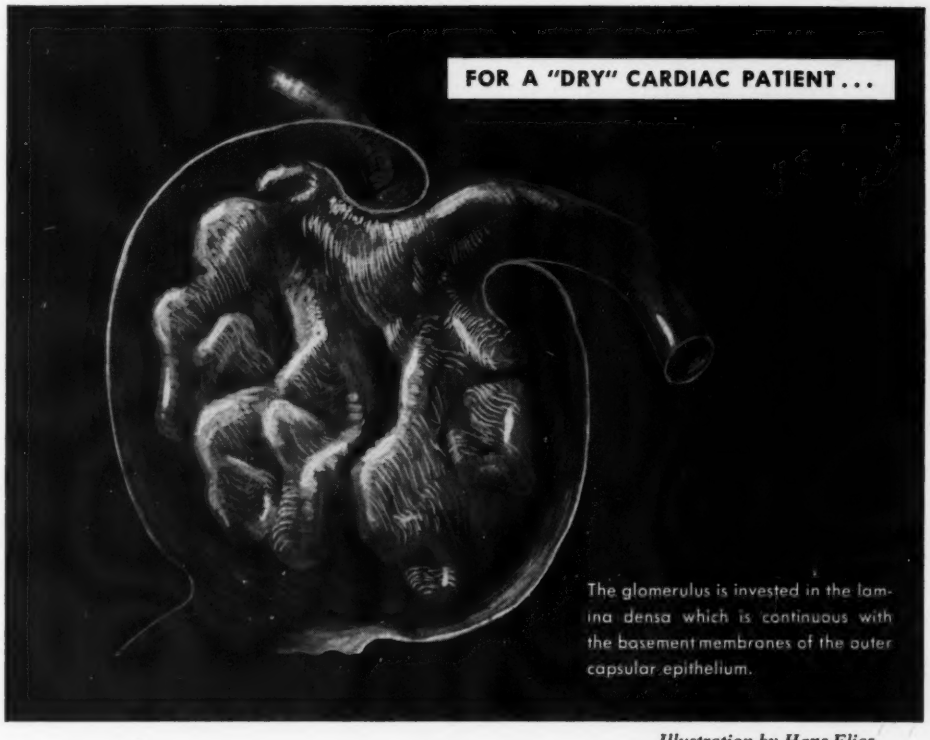
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1. Asher, G.: Personal communication, June 23, 1956.
2. Settel, E.: Rolicton® (Aminoisometradine), a New, Non-mercurial Diuretic, Postgrad. Med. *21*:186 (Feb.) 1957.
3. Goldner, M. G.: Personal communication, June 29, 1956.

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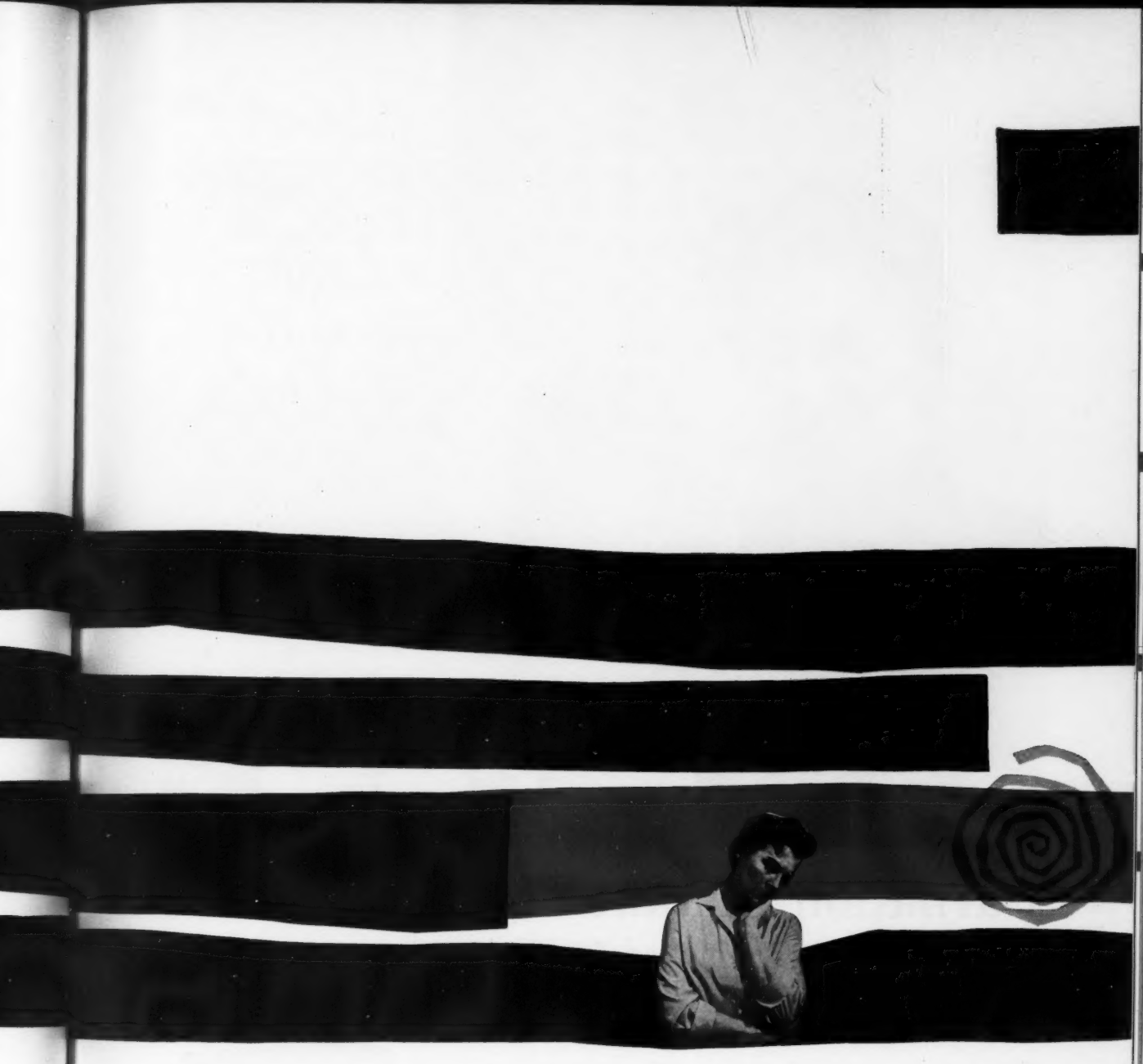

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1. Johnson, H. J., Jr.: Am. Pract. & Digest. Treat. *5*:862 (Nov.) 1954.
2. Beale, H. D.; Rawling, F. F. A., and Figley, K. D.: J. Allergy *25*:521 (Nov.) 1954.

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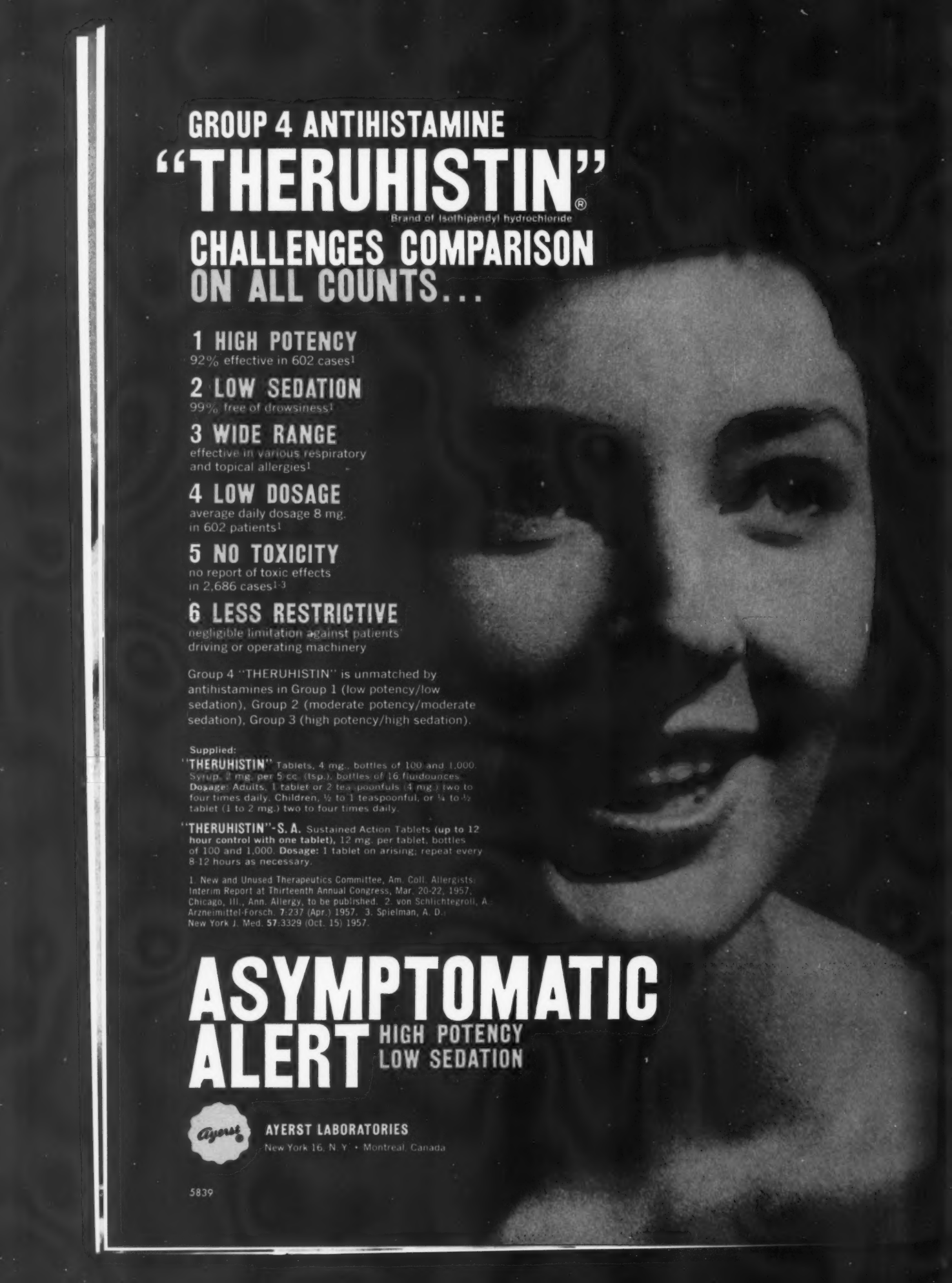

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1. New and Unused Therapeutics Committee, Am. Coll. Allergists: Interim Report at Thirteenth Annual Congress, Mar. 20-22, 1957, Chicago, Ill., Ann. Allergy, to be published. 2. von Schlichtegroll, A.: Arzneimittel-Forsch. **7**:237 (Apr.) 1957. 3. Spielman, A. D.: New York J. Med. **57**:3329 (Oct. 15) 1957.

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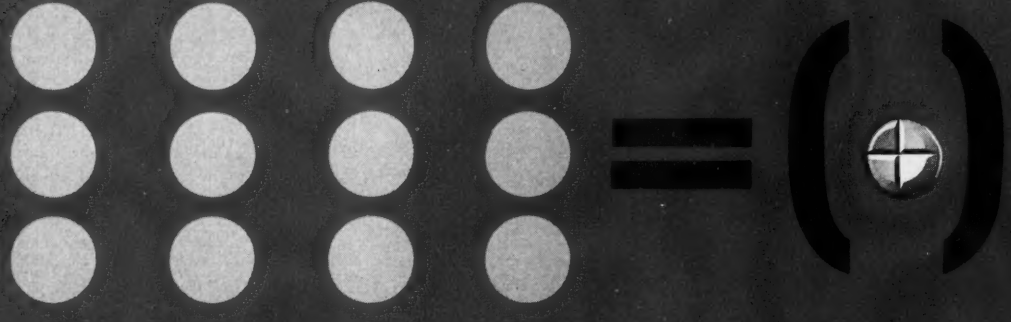

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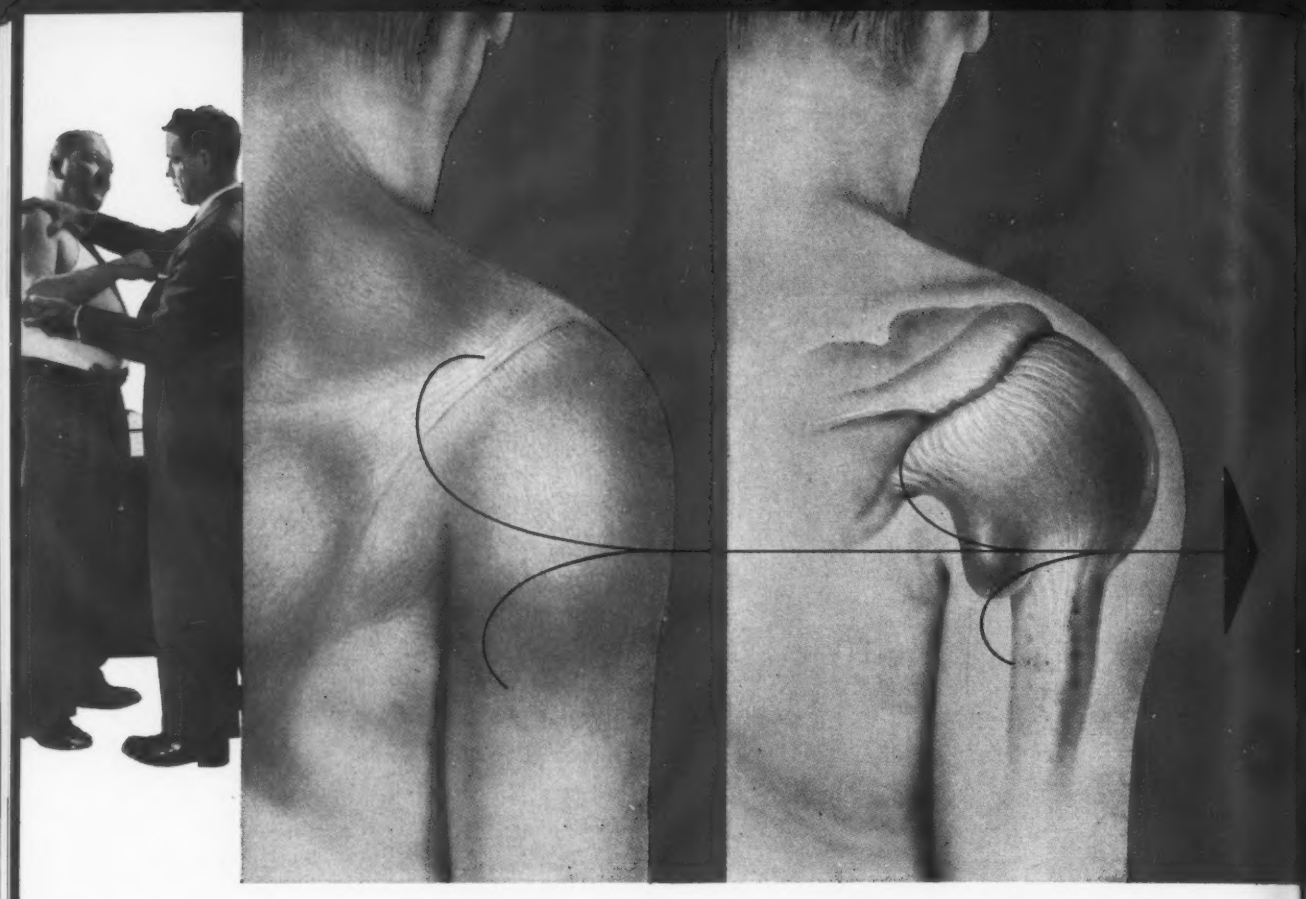

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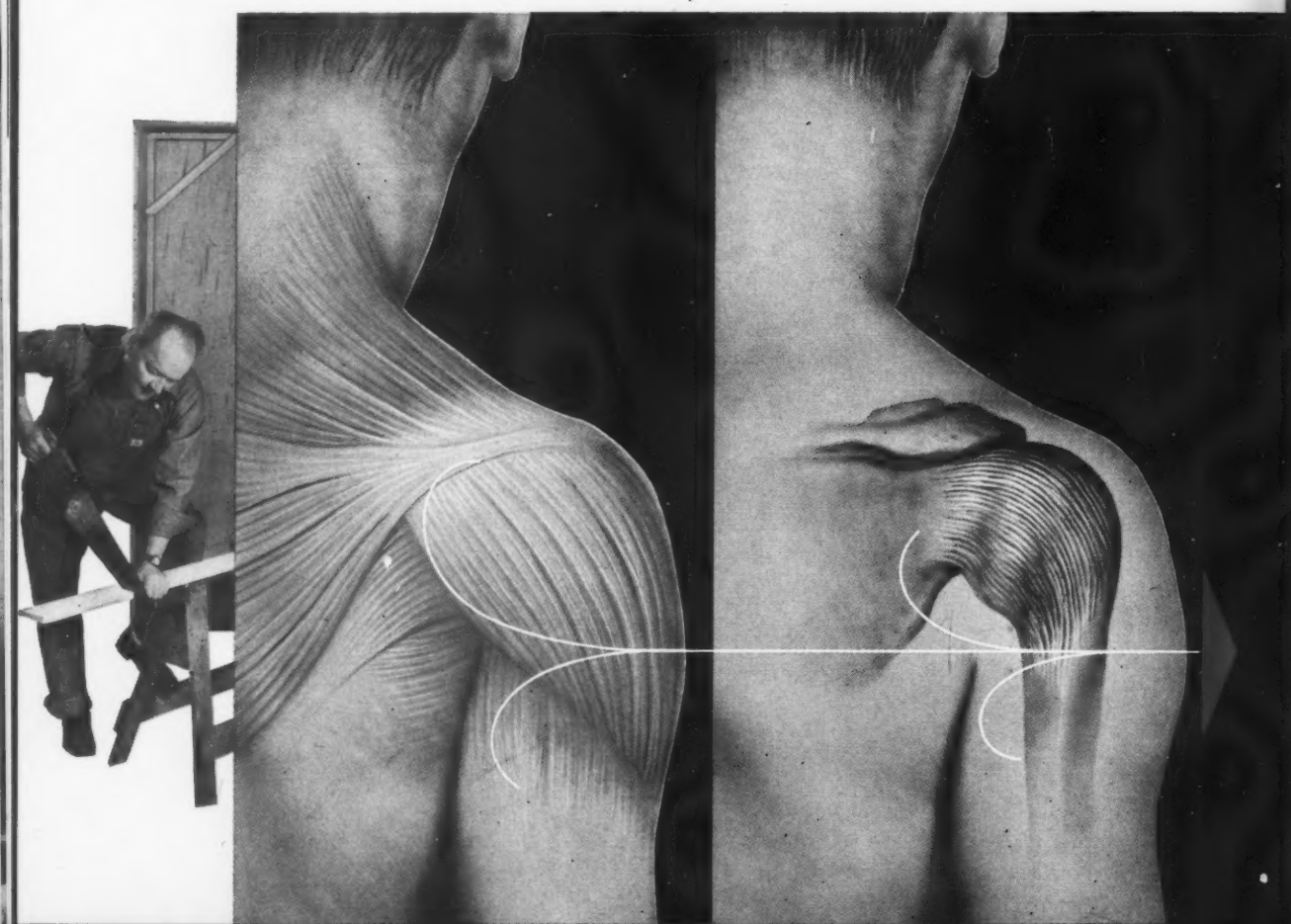

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1. Comroe's Arthritis: Hollander, J. L., p. 149 (Fifth Edition, Lea & Febiger, Philadelphia, Pa. 1953).
2. Merck Manual: Lyght, C. E., p. 1102 (Ninth Edition, Merck & Co., Inc., Rahway, N. J. 1956).

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- **may be lifesaving in certain anaphylactic reaction cases**[4,5]†

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references (1) Becker, R. M.: New England J. Med. 254:952, 1956. (2) Chen, J. Y. P.; Bard, J. W., and Balsito, A. A.: Antibiotics Symposium, Oct. 3, 1957, in press. (3) Zimmerman, M. C.: Antibiotics Symposium, Oct. 3, 1957, in press. (4) Becker, R. M.: 106th Ann. Meet., A.M.A., New York, N. Y., June 5, 1957. (5) Becker, R. M.: Antibiotics Symposium, Oct. 3, 1957, in press. (6) Minno, A. M., and Davis, G. M.: J.A.M.A. 165:222, 1957. (7) Davis, G. M.: Discussion, Antibiotics Symposium, Oct. 3, 1957. (8) Zimmerman, M. C.: The Prophylaxis and Treatment of Penicillin Reactions with Penicillinase, Clin. Med., in press.

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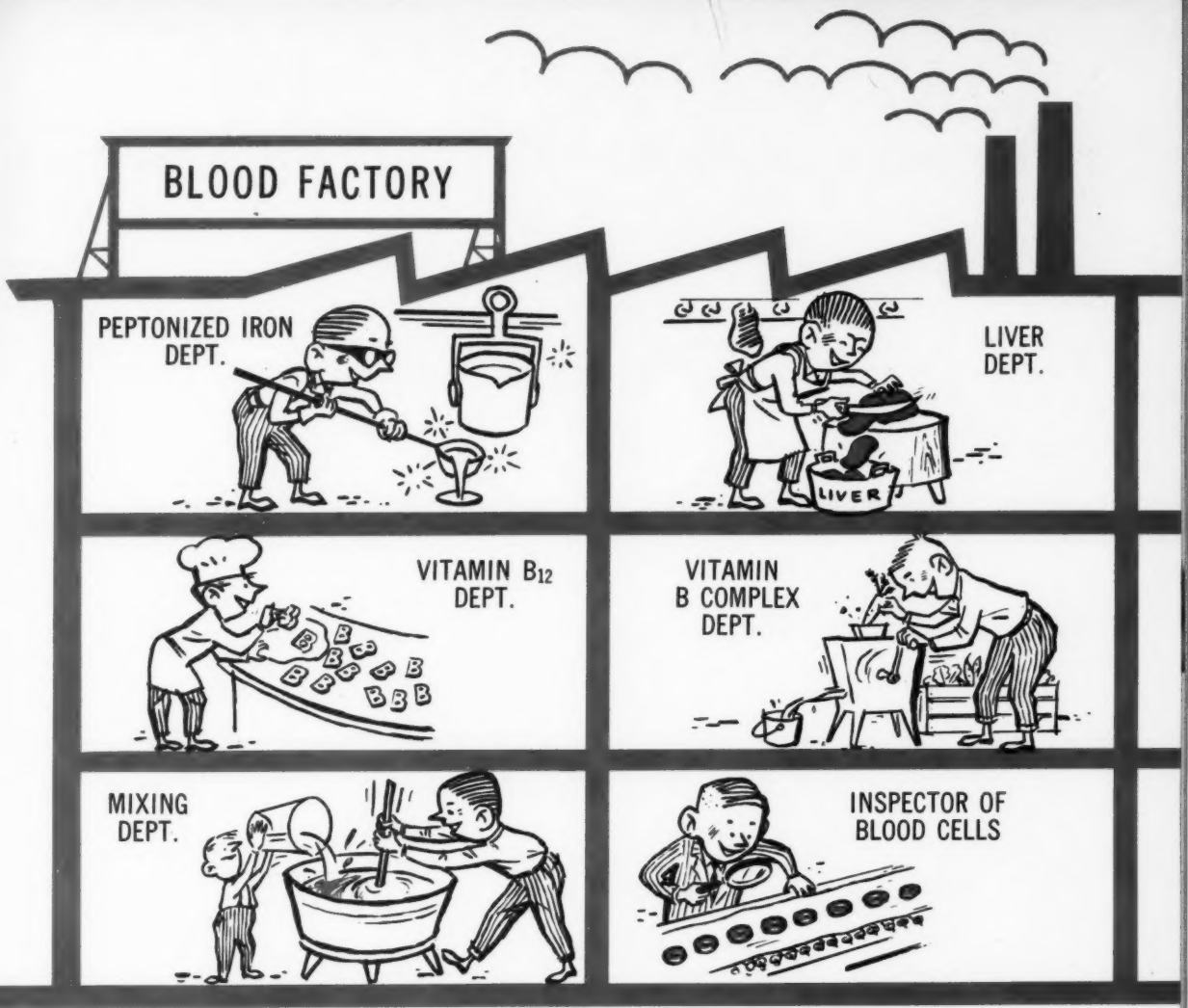

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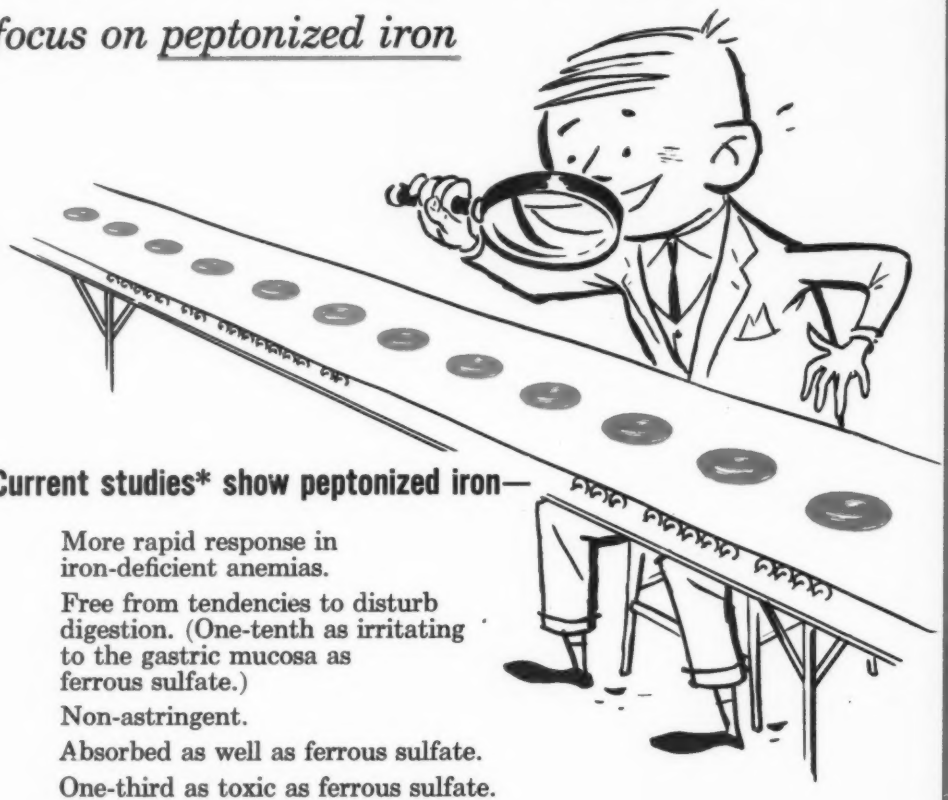

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*Keith, J.H.: Utilization and Toxicity of Peptonized Iron and Ferrous Sulfate, Am. J. Clin. Nutrition *1*:35 (Jan.-Feb., 1957).

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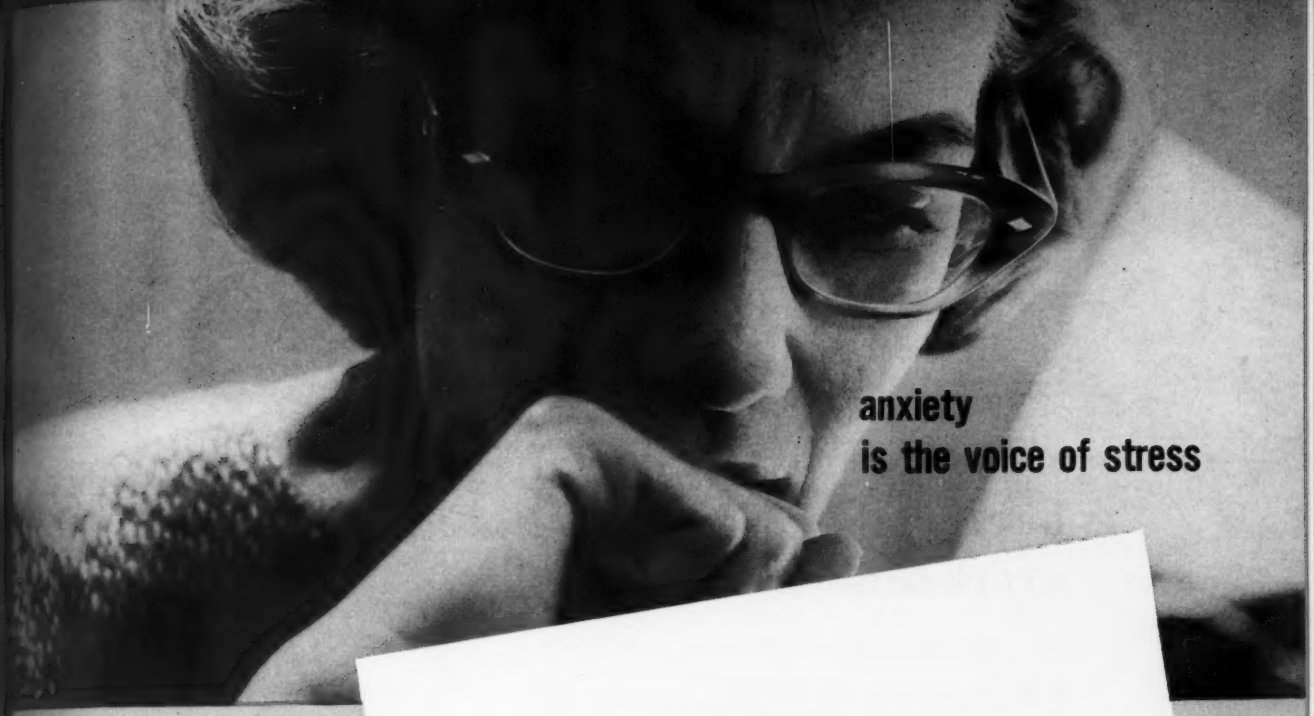


anxiety
is the voice of stress

premenstrual
tension
is a state
of stress

Representative Case Report:

Secretary, married, nulliparous

Recurrent premenstrual tension, marked by nervousness, irritability, fatigue, headache, muscular aches, and cramps. Daily meprobamate therapy was begun in the succeeding menstrual period at the onset of symptoms, and was continued until the third day. The medication is now taken regularly on this schedule, and the patient reports marked relief, both somatic and psychic.

EP S

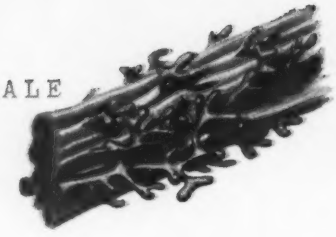
EQUANIL Meprobamate
PHENERGAN® HCl Promethazine HCl
SPARINE® HCl Promazine HCl

A Wyeth normotropic drug for nearly every patient under stress

Wyeth®
Philadelphia 1, Pa.

Equanil®
Meprobamate

Relieves tension—mental and muscular

THE FEMALE  URETHRA

bacterial urethritis

The female urethra, surrounded by a tortuous network of periurethral glands, is highly susceptible to localized infection . . . a frequent source of pelvic distress.[1,2]

postmenopausal urethritis

After the menopause, estrogen deficiency leads to atrophy of the urethral mucosa with increased susceptibility to infection . . . a frequent source of pelvic distress.[4]

FURACIN®
BRAND OF NITROFURAZONE
urethral suppositories

are antibacterial . . . anesthetic . . . gently dilating . . . provide rapid control of both pain and infection.[3]

Each Suppository contains Furacin 0.2% and diperodon•HCl 2%, in a water-dispersible base. Hermetically sealed in silver foil, box of 12.

1. Wharton, L. R. in Campbell, M.: Urology, Philadelphia and London, W B. Saunders Company, 1954, vol. 2, p. 1390 et seq.
2. Barrett, M. E.: J. M. Ass. Alabama 26:144, 1956. 3. Youngblood, V. H.: J. Urol., Balt.,70:926, 1953.

FURESTROL™
suppositories

are estrogenic as well as antibacterial, anesthetic, and gently dilating . . . provide "progressive histologic normalization" as well as prompt symptomatic relief.[5]

Each Suppository contains Furacin 0.2%, diperodon•HCl 2%, and diethylstilbestrol 0.0077% (0.1 mg.), in a water-dispersible base. Hermetically sealed in orchid foil, box of 12.

4. Youngblood, V. H.; Tomlin, E. M.; Williams, J. O. and Kimmelstiel, P.: Tr. Southeast. Sect. Am. Urol. Ass. (to be published).
5. Youngblood, V. H.; Tomlin, E. M.; and Davis, J. B.: J. Urol., Balt., 78:150, 1957.

NITROFURANS — a unique class of antimicrobials — products of Eaton research.
EATON LABORATORIES, NORWICH, NEW YORK

an advanced method of theophylline therapy

CLYSMATHANE
(FLEET)

Disposable Rectal Unit

simple ... safe ... effective ...

For the alleviation of symptoms in bronchial asthma and the acute episodes of heart failure, CLYSMATHANE (Fleet) supplies prompt therapeutically adequate blood levels of theophylline.[1]

Even after repeated dosage CLYSMATHANE (Fleet) minimizes the side effects often associated with oral or parenteral theophylline administration. The plastic squeeze bottle (with attached, prelubricated, non-traumatic rectal tube) is designed for self-administration.

Dosage: One CLYSMATHANE (Fleet) Unit as a retention enema before retiring or as directed. Available on prescription at professional pharmacies.

Composition: Theophylline monoethanolamine (Theamin, Fleet) 0.625 Gm. aqua 37.0 ml. in rectal dispenser. Units packed in individual cartons, manufacturer's label readily removable.

REFERENCE: (1) Ridolfo, A. S. & Kohlstaedt, K. G., "A simplified method for the rectal instillation of theophylline"— to be published

CLYSMATHANE
(FLEET)

Disposable Rectal Unit

since 1889 Fleet

Professional Samples and literature on request

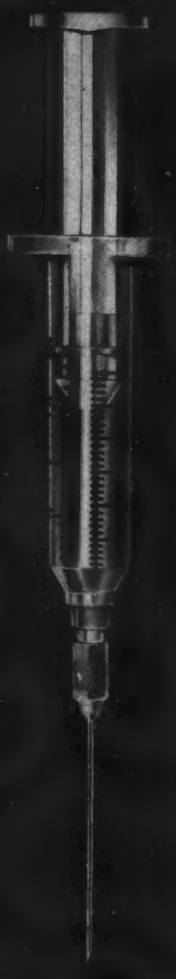
C. B. FLEET CO., INC.

Lynchburg, Virginia

NEW

STYLEX®

expendable hypodermic syringe



HOSPITAL PROVEN

SAFER
guaranteed sterility · nonpyrogenic · reduces danger of cross-infection.

MORE CONVENIENT
saves time · ends cleaning, sterilization, and needle sharpening.

MORE EFFICIENT
significant increase in over-all efficiency reported by current hospital users.

PHARMASEAL LABORATORIES
Affiliate of DON BAXTER, INC.
GLENDALE 1, CALIFORNIA

PHARMASEAL

® Trade-mark

when you want Broad-Spectrum Benefits . . .

When you want extended antibacterial coverage with high relative safety, consider PEN·VEE SULFAS. Consider how it permits you to reserve the conventional broad-spectrum antibiotics for the resistant infections specifically requiring them. Consider PEN·VEE SULFAS because it unites penicillin V and sulfapyrimidines for potent complementary action. Prescribe it for wide antimicrobial attack in mixed infections and those not readily diagnosed.

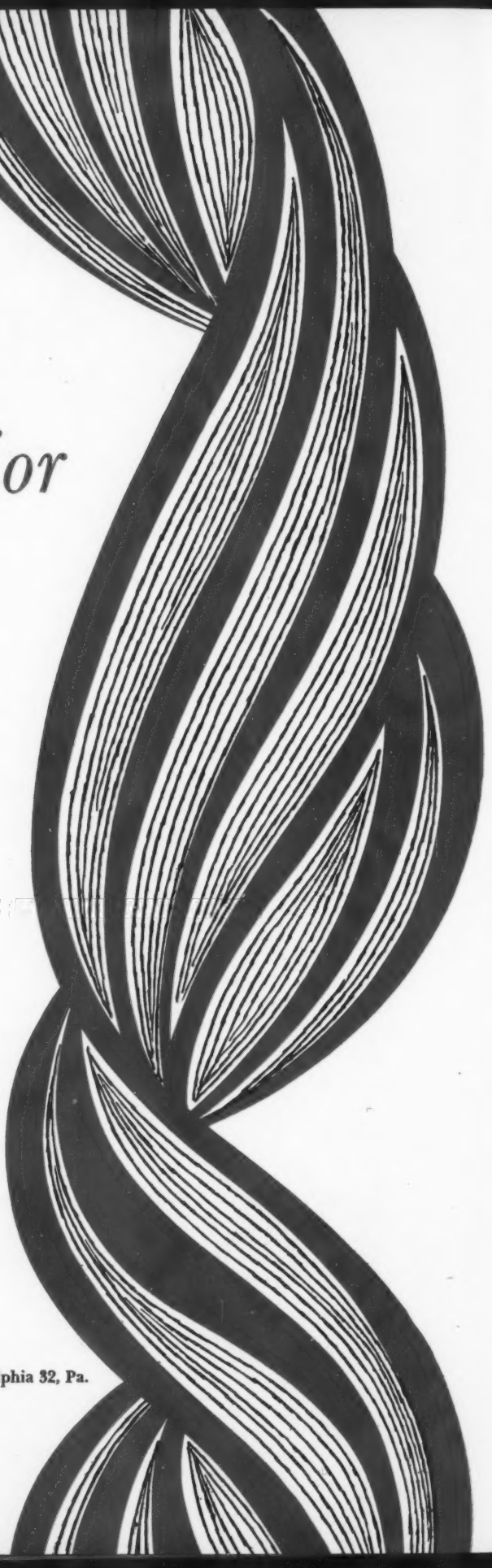
Supplied: PEN·VEE SULFAS Tablets, bottles of 36. Each tablet contains 90 mg. (150,000 units) of penicillin V, 0.25 Gm. of sulfadiazine, and 0.25 Gm. of sulfamerazine. PEN·VEE SULFAS for Suspension, bottles of 2 fl. oz. upon reconstitution. Each 5-cc. teaspoonful after reconstitution contains 90 mg. (150,000 units) of benzathine penicillin V, 0.25 Gm. of sulfadiazine, and 0.25 Gm. of sulfamerazine.

Wyeth®
Philadelphia 1, Pa.

PEN·VEE® SULFAS

Tablets: Penicillin V (Phenoxymethyl Penicillin) and Sulfonamides
For Suspension: Benzathine Penicillin V and Sulfonamides

new, superior



McNEIL Laboratories, Inc • Philadelphia 32, Pa.

SPECIFIC FOR PAINFUL MUSCLE SPASM

PARAFLEX*

Chlorzoxazone†

skeletal muscle relaxant

HIGHLY EFFECTIVE WITH PRACTICAL DOSAGE

in common traumatic, orthopedic, arthritic and rheumatic disorders, including: low back pain • sprains • strains • rheumatoid arthritis • osteoarthritis • spondylitis • myalgia • fibrositis • cervical root syndrome • wry neck • disc syndrome

EFFECTIVELY RELIEVES SPASM AND PAIN—In a controlled, double-blind study, marked improvement was reported in all but one of 15 patients treated with PARAFLEX.[1] Another investigator noted that symptoms were at least partially alleviated in all of the patients treated.[2]

PRODUCES LONG-LASTING BENEFITS—Significant blood levels following the administration of PARAFLEX are maintained for periods of 6 hours or more.[3] In most patients, the beneficial effects of PARAFLEX persisted for approximately six hours.[4]

AVERAGE DOSE—SIX TABLETS DAILY—With PARAFLEX, just one or two tablets, three times daily is an average effective dose. In experimental studies, PARAFLEX was found to be from one and one-half to three times as potent as other commonly used muscle relaxants.

IS WELL TOLERATED—Side effects are uncommon and seldom severe enough to require discontinuation of the drug.[5] Other clinicians have encountered few side effects to date.[1,2,4,6,7]

SUPPLIED—Tablets, scored, orange, bottles of 50. Each tablet contains 250 mg. of PARAFLEX.

REFERENCES—(1) Settel, E.: Personal communication. (2) Holley, H. L.: Personal communication. (3) Burns, J. J.; Trousof, N., and Brodie, B. B.: To be published. (4) Smith, R. T.: To be published. (5) Peak, W. P., and Smith, R. T.: To be published. (6) Wiesel, L. L.: Personal communication. (7) Passarelli, W. W.: Personal communication.

CLINICAL RESULTS WITH PARAFLEX

Investigator	Disorder	Number of patients treated	Number of patients benefited	Comment
Settel[1]	acute low back pain, acute traumatic myofascitis, or osteoarthritis	15	14	response excellent in nine, good in five
Holley[2]	wry neck, cervical spondylitis, and disc syndrome	10	10	improvement, ranging from some amelioration of symptoms to profound relief
Wiesel[6]	advanced osteoarthritis	12	10	less muscle spasm and pain
Passarelli[7]	degenerative and rheumatoid arthritis	9	9	improvement, with less stiffness and freer motion
Passarelli[7]	varied arthritic rheumatic, and traumatic disorders	6	6	less stiffness, less pain
Totals		52	49	

*Trade-mark †U. S. Patent Pending

174488

carrier unto himself

Once he is infected with athlete's foot, he is likely to remain a "carrier unto himself," even without re-exposure. Daily routine application of Desenex protects against reinfection and recurrence.

Desenex®
OINTMENT — POWDER
SOLUTION

fast relief from itching

prompt antimycotic action

continuing prophylaxis

NIGHT and DAY treatment

AT NIGHT — Desenex Ointment (zincundecate) 1 oz. tubes. —

DURING THE DAY — Desenex Powder (zincundecate) — 1½ oz. container.

ALSO — Desenex Solution (undecylenic acid) — 2 fl. oz. bottles.

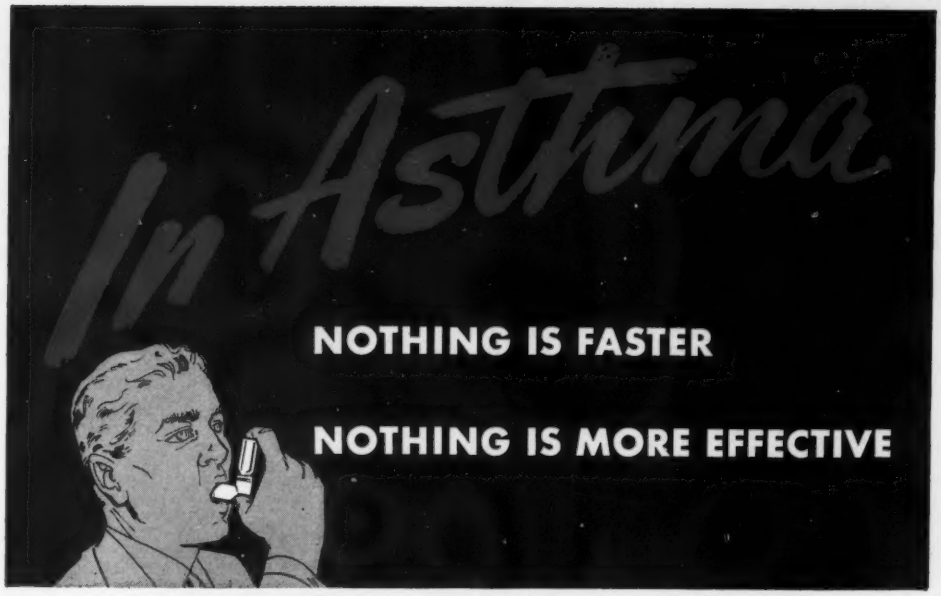
In otomycosis — Desenex Solution or Ointment.

Write for samples.

Maltbie

MALTBIE LABORATORIES DIVISION • WALLACE & TIERNAN, INC. • Belleville 9, N. J.

PD-71



PRE-MICRONIZATION assures particle size for maximum effectiveness

Medihaler-EPI®

For quick relief of bronchospasm of any origin. More rapid than injected epinephrine in acute allergic attacks.

Epinephrine bitartrate, 7.0 mg. per cc., suspended in inert, nontoxic aerosol vehicle. Contains no alcohol. Each measured dose 0.15 mg. free epinephrine.

Medihaler-ISO®

Unsurpassed for rapid relief of symptoms of asthma and emphysema.

Isoproterenol sulfate, 2.0 mg. per cc., suspended in inert, nontoxic aerosol vehicle. Contains no alcohol. Each measured dose 0.06 mg. free isoproterenol.

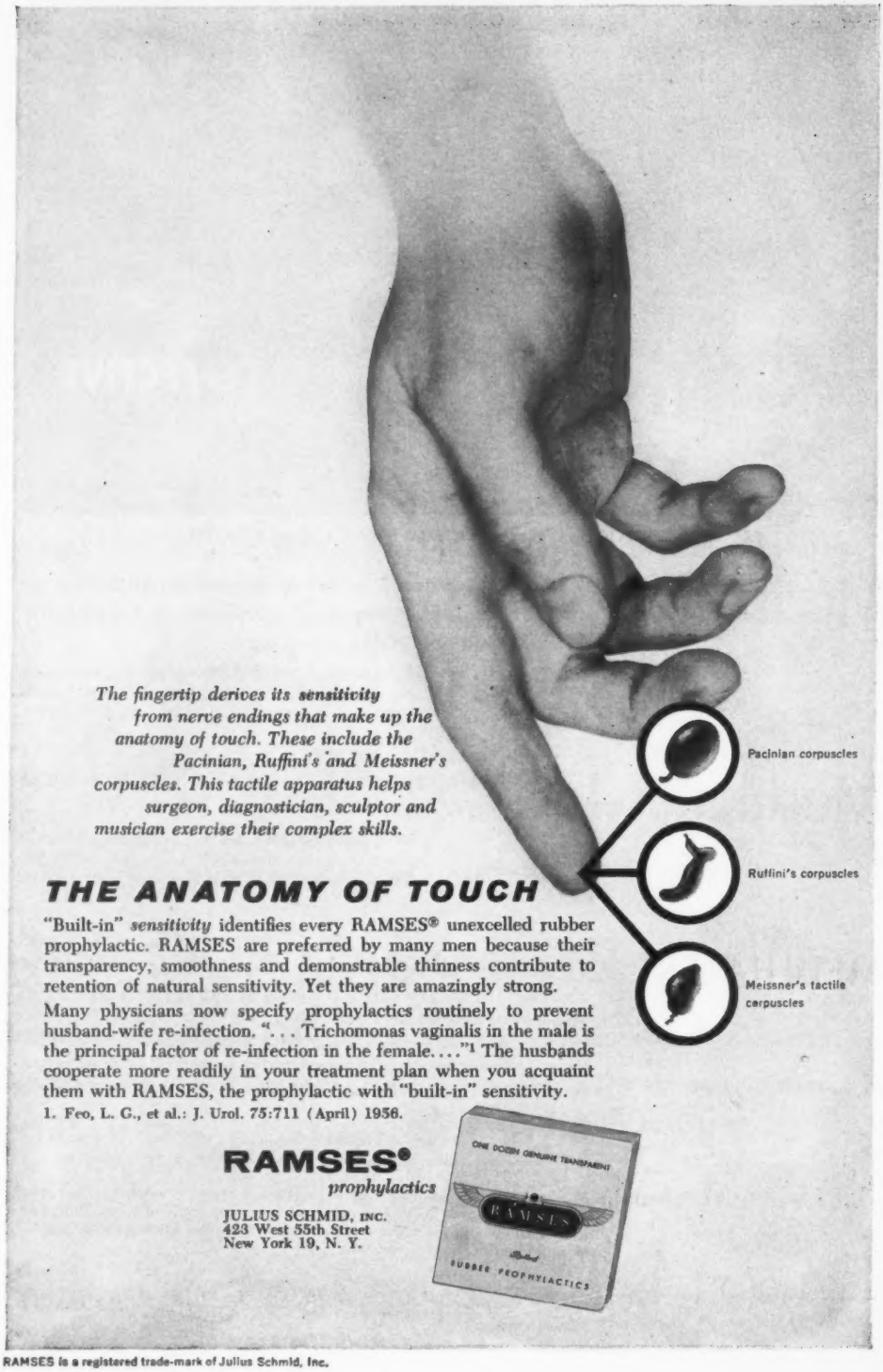
MEDIHALER® *For Ample Air Right Now!*

Millions of asthmatic attacks have been aborted faster, more effectively, more economically with Medihaler-Epi and Medihaler-Iso. Automatically measured dosage and true nebulization...nothing to pour or measure...One inhalation usually gives prompt relief.

Prescribe Medihaler medication with Oral Adapter as first prescription. Refills available without Oral Adapter.

The Medihaler Principle of automatically measured-dose aerosol medications in spillproof, leakproof, shatterproof, vest-pocket size dispensers also available in Medihaler-Phen® (phenylephrine, hydrocortisone, phenylpropanolamine, neomycin) for prompt, lasting relief of nasal congestion.

Riker LOS ANGELES



The fingertip derives its sensitivity from nerve endings that make up the anatomy of touch. These include the Pacinian, Ruffini's and Meissner's corpuscles. This tactile apparatus helps surgeon, diagnostician, sculptor and musician exercise their complex skills.

THE ANATOMY OF TOUCH

"Built-in" *sensitivity* identifies every RAMSES® unexcelled rubber prophylactic. RAMSES are preferred by many men because their transparency, smoothness and demonstrable thinness contribute to retention of natural sensitivity. Yet they are amazingly strong.

Many physicians now specify prophylactics routinely to prevent husband-wife re-infection. ". . . Trichomonas vaginalis in the male is the principal factor of re-infection in the female. . . ."[1] The husbands cooperate more readily in your treatment plan when you acquaint them with RAMSES, the prophylactic with "built-in" sensitivity.

1. Feo, L. G., et al.: J. Urol. 75:711 (April) 1956.

RAMSES®
prophylactics

JULIUS SCHMID, INC.
423 West 55th Street
New York 19, N. Y.

RAMSES is a registered trade-mark of Julius Schmid, Inc.

for the best in
tetracycline therapy...
new, rapidly effective

1. highest, fastest tetracycline blood levels

Analysis of a 4-way crossover study confirms that Cosa-Tetracyn produces the highest, fastest blood levels of all available tetracycline enhancement formulations.[1]

2. greatest consistency of high tetracycline blood levels

In a 4-way crossover study, Cosa-Tetracyn demonstrated greatest consistency of high blood levels compared to tetracycline-citric acid, tetracycline phosphate complex, and tetracycline-sodium hexametaphosphate.[1]

3. safe, physiologic advantages of glucosamine

Completely safe as an enhancement agent, glucosamine is nontoxic, sodium free, nonirritating to the gastrointestinal tract, and there is evidence it may influence favorably the bacterial flora of the intestine.

The most widely prescribed broad-spectrum antibiotic now potentiated with glucosamine, the enhancing agent of choice.

Cosa-Tetracyn is supplied in capsules, 250 mg., bottles of 16 and 100; and half-strength capsules (125 mg.) for long-term therapy or pediatric use, bottles of 25 and 100.

1. Carlozzi, M.: Antibiotic Med. & Clin. Therapy 5:146 (Feb.) 1958.

Pfizer

PFIZER LABORATORIES
Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

COSA-TETRACYN*

GLUCOSAMINE-POTENTIATED TETRACYCLINE

TAKE A NEW LOOK AT ALLERGENS* TAKE A LOOK AT NEW DĪMETANE

There is no antihistamine better than DIMETANE for allergic protection. DIMETANE gives you good reasons to re-examine the antihistamine you are now using: unexcelled potency, unsurpassed therapeutic index and relative safety...minimum drowsiness or other side effects. Has been effective where other antihistamines have failed. DIMETANE Extentabs® (12 mg.) protect for 10-12 hours on one tablet. Also available: Tablets (4 mg.), Elixir (2 mg. per 5 cc.).

A. H. ROBINS CO., INC., Richmond 20, Virginia
Ethical Pharmaceuticals of Merit Since 1878

*Typical Allergens: Animal Hair and Dander • Pollen • Molds • Bacteria and Viruses • Feathers • Insect Scales • Vegetable Fibers and Seeds Plant Juices • House Dust • Drugs and Chemicals • Minerals and Metals.

Robins

Dīmetane® (PARABROMDYLAMINE MALEATE)

when you treat common bacterial infections...

a well patient back on the job

measures therapeutic success

Pentids

Squibb 200,000 Unit Buffered Penicillin G Potassium Tablets

when an oral penicillin is indicated...prescribe Pentids

Six years experience by physicians in treating many millions of patients with Pentids confirm clinical effectiveness and safety. Excellent results are obtained with Pentids in many common bacterial infections with only 1 or 2 tablets t.i.d. Pentids may be taken without regard to meals. Pentids are economical . . . cost less than other penicillin salts.

DOSE: 1 or 2 tablets t.i.d. without regard to meals

SUPPLY: Bottles of 12, 100 and 500 tablets

other **Pentids** *products*

NEW Pentids For Syrup: Squibb Flavored Penicillin Powder: when prepared with 35 cc. of water, the preparation provides 60 cc. of fruit-flavored syrup, 200,000 units per teaspoonful (5 cc.).

Pentids Capsules: Squibb Penicillin G Potassium 200,000 Unit Capsules, bottles of 24, 100 and 500.

Pentids Soluble Tablets: Squibb Penicillin G Potassium Soluble Tablets—200,000 units, vials of 12, bottles of 100.

Pentid-Sulfas Tablets: Squibb Penicillin with Triple Sulfas, bottles of 30, 100 and 500.

These formulations are given ½ hr. before meals or 2 hrs. after meals.

SQUIBB *Squibb Quality—the Priceless Ingredient*

"PENTIDS"® IS A SQUIBB TRADEMARK

extra protection for every conception

Decidual bleeding due to capillary fragility leads to abortion

Hesper-C Prenatal

with capillary-protective factors plus vitamins-minerals

a precaution in every pregnancy
a necessity in habitual abortion[1,2]

Routine care during pregnancy should include protection against decidual bleeding. To guard against spontaneous and habitual abortion, Hesper-C Prenatal provides the essential capillary-protective factors (hesperidin complex and ascorbic acid) *plus* the supplemental vitamins and minerals required during gestation.

The usual daily dosage (2 capsules t.i.d.) provides:			
HESPERIDIN COMPLEX	600 mg.	Thiamine Mononitrate	7.5 mg.
ASCORBIC ACID	600 mg.	Riboflavin	4.5 mg.
Ferrous Gluconate (15 mg. iron)	130 mg.	Nicotinamide	30.0 mg.
Calcium Pantothenate	6 mg.	Vitamin B_{12}	4.5 mcg.
Calcium Carbonate (500 mg. calcium)	1.25 Gm.	Folic Acid	0.3 mg.
Vitamin A Acetate	6,000 U.S.P. Units	Pyridoxine Hydrochloride	10.0 mg.
Vitamin D_2	1,200 U.S.P. Units	Copper Sulfate (3.0 mg. copper)	12.0 mg.
		Potassium Iodide (0.3 mg. iodine)	0.4 mg.

Providing the daily requirements or more of vitamins and iron during pregnancy as recommended by the National Research Council.

1. Greenblatt, R. B.: Obst. & Gynec. *2*:530, 1953.
2. Dill, L. V.: M. Ann. District of Columbia *23*:667, 1954.

THE NATIONAL DRUG COMPANY
Philadelphia 44, Pa.

NCP 1909/57

Products of Original Research

GET YOUR BABIES OFF TO A STRONG START WITH

Baker's

MODIFIED MILK

A complete formula in liquid and powder form prepared exclusively from Grade A Milk

Happy Jeanette, aglow with health, is a Baker's Blue Ribbon Baby.

Doctor, your dietary decision can build *Blue Ribbon* babies. The baby who wins the blue ribbon is the one whose doctor—no one else—selects its formula.

BAKER'S MODIFIED MILK BUILDS BLUE RIBBON BABIES

- A complete, balanced uniform formula.
- Convenient and easy to prepare—simply add water.
- Made from milk of outstanding purity.
- Provides adequate amounts of all known essential vitamins plus much-needed iron.
- Butterfat replaced by easily digested vegetable oils.
- Twice homogenized for better digestion and absorption.
- Helps doctor control infant's formula longer. Advertised to the medical profession only.
- Economical to use—eliminates need for additional vitamins and iron.

FURNISHED GRATIS TO HOSPITALS FOR NURSERY USE

Available in drug stores

OTHER PRODUCTS—VARAMEL—a scientifically formulated evaporated milk product prepared exclusively from Grade A Milk

Normal Dilutions
Liquid Form—1 fl. oz. milk to 1 fl. oz. water
Powder Form—1 Tbsp. powder to 2 fl. oz. water
20 calories per ounce

The Baker Laboratories, Inc. • Cleveland 3, Ohio

Milk Products Exclusively for the Medical Profession

INTENSIFIED BROAD-SPECTRUM ANTIBIOTIC CONTROL

Tetrex® CAPSULES

Tetracycline Phosphate Complex U. S. Pat. 2,701,809

often the difference between rapid and delayed response

blood levels practically double those of tetracycline hydrochloride within 1-3 hours/ ***maintains higher blood levels*** than tetracycline hydrochloride up to 24 hours/ ***a single, highly efficient antibiotic*** permitting simple, flexible dosage/ ***equally effective on convenient b.i.d. schedule,*** as on a q.i.d. schedule/ ***practically sodium-free***—pure compound—*not a mixture.*

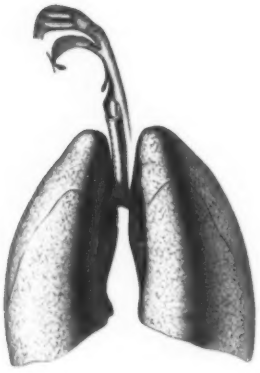
Supplied: TETREX Capsules containing the equivalent of 250 mg. tetracycline HCl activity; bottles of 16 and 100. New TETREX Pediatric Capsules containing the equivalent of 100 mg. tetracycline HCl activity; bottles of 25 and 100.

Tetrex®

Tetracycline Phosphate Complex **250 • 100 mg. CAPSULES**

Bristol
LABORATORIES INC.
SYRACUSE, NEW YORK

'DUANAT' REPRODUCTION, PAT. PENDING.



Tetrex®-APC
WITH BRISTAMIN®

Bristol
LABORATORIES INC
SYRACUSE, NEW YORK

'DUANAT' REPRODUCTION, PAT. PENDING.

INTENSIFIED TETRACYCLINE CONTROL

Integrated with ANALGESIA CONTROL / ANTIHISTAMINE CONTROL

new for respiratory infections

Tetrex®-APC
WITH BRISTAMIN®

▪ *The only anti-infective preparation providing* "all-factor" control through the (1) faster, higher blood levels and broad-range activity of TETREX (2) analgesic-antipyretic action of APC (3) notably potent antihistamine effects of BRISTAMIN, virtually free of somnolence. ▪ *Specific therapy* for bacterial infections caused by tetracycline-sensitive organisms. *Ideal adjunctive therapy* in common upper respiratory tract infections for control of secondary bacterial invasion. ▪ *Convenient, economical.*

Each capsule contains:	TETREX (tetracycline phosphate complex) (tetracycline HCl activity)	125 mg.
	Aspirin	150 mg.
	Phenacetin	120 mg.
	Caffeine	30 mg.
	Bristamin (Phenyltoloxamine Citrate)	25 mg.

Usual dose: One or two capsules q.i.d.
Supplied: Bottles of 24 and 100.

Willie, the Worrier

Nothing is too trivial for him to worry about. His mind is constantly on a treadmill, mulling over money, people, and calamities that never happen. To relax the feverish activity of worrisome minds like Willie's, BUTISOL SODIUM offers the gentle type of "daytime sedation" needed.

BUTISOL SODIUM®
BUTABARBITAL SODIUM

McNEIL
Laboratories, Inc.
Philadelphia 32, Pa.

TABLETS, 15 mg. (¼ gr.), 30 mg. (½ gr.), 50 mg. (¾ gr.), 100 mg. (1½ gr.), R-A (Repeat Action) 30 mg. and 60 mg.

ELIXIR, 30 mg. (½ gr.) per 5 cc.

CAPSULES, 100 mg. (1½ gr.)

for sure antibacterial control

in urinary tract infections

mandelamine

It's effective against almost all types of urinary tract organisms... controls even antibiotic and sulfonamide-resistant bacteria. Yet, Mandelamine is *not* an antibiotic! Mandelamine won't sensitize patients..., no resistant bacterial strains develop... side effects are minimal. Mandelamine is one of the safest of all drugs for prolonged use, and—happily for patients—costs far less than other antibacterial agents!

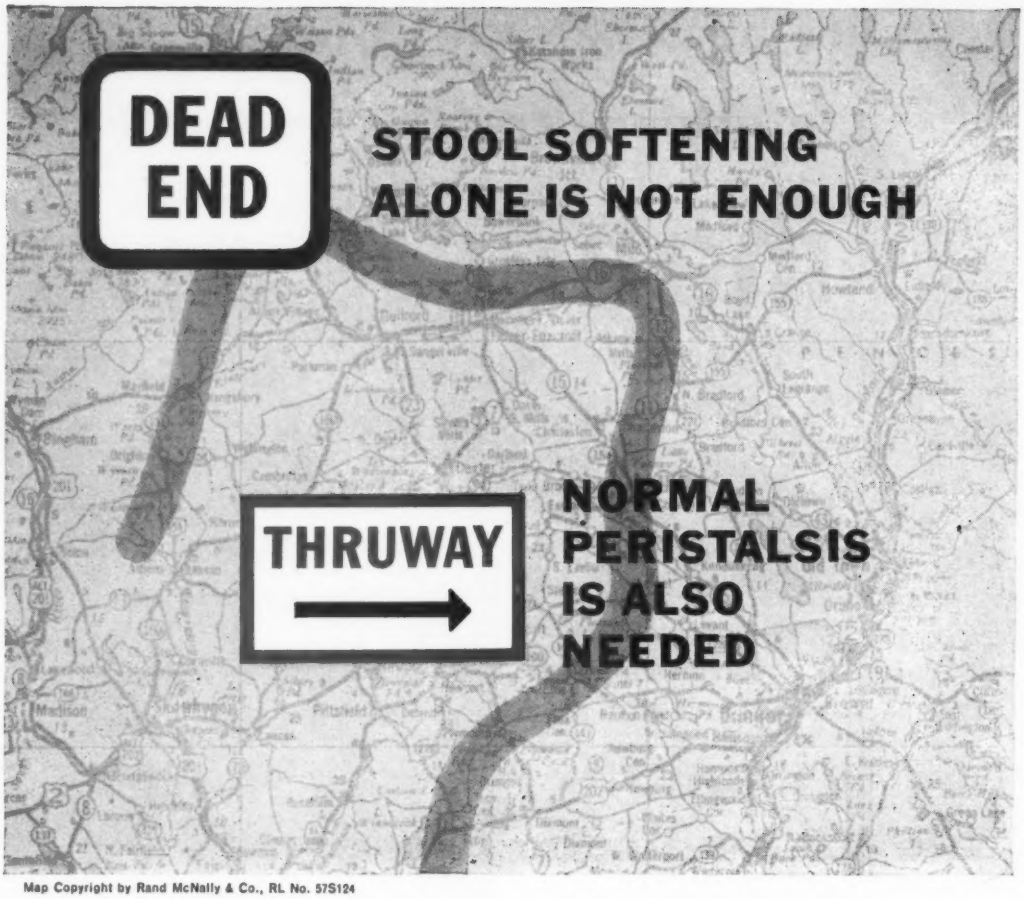
safe for long-term use for all ages

Supplied in Hafgrams® (0.5 Gm. tablets), 0.25 Gm. tablets, and pleasantly flavored Mandelamine Suspension for pediatric use. Adults take an initial daily dose of 4 to 6 Gm., and can be maintained on 3 Gm. daily indefinitely. Children need as little as 1 Gm. daily. (Mandelamine Discs, for quick identification of Mandelamine-sensitive bacteria, available from your laboratory supply house.)

Nepera Laboratories, Morris Plains, N.J.

MANDELAMINE®

safe and effective for chronic urinary tract infections



Map Copyright by Rand McNally & Co., RL No. 57S124

Aquatyl®

a natural peristaltic stimulator with effective stool softening action

restores normal bowel physiology to provide normal, lasting correction of constipation. Each Aquatyl tabule contains 50 mg. dioctyl sodium sulfosuccinate and 100 mg. cholic acid. Dioctyl sodium sulfosuccinate safely softens the stool . . . cholic acid, an elemental body constituent, sparks natural peristalsis and a return to normal evacuation.

Dosage: Initially, two or three tabules with a full glass of water 3 times daily for three days. Maintenance therapy, usually 1 or 2 tabules daily.

Neisler IRWIN, NEISLER & CO. • DECATUR, ILLINOIS

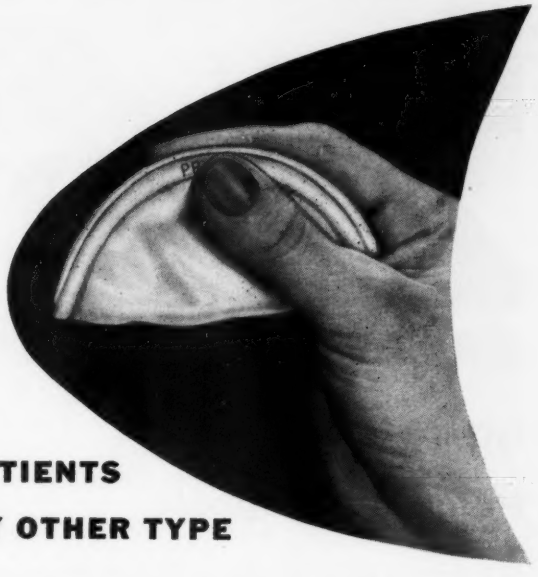
DOCTOR, IT'S A FACT!

Koro-Flex
TRADE MARK

improved

THE DIAPHRAGM WITH THE

CONTOURING COIL SPRING



OFFERS YOU AND YOUR PATIENTS

MORE BENEFITS THAN ANY OTHER TYPE

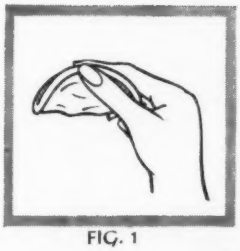


FIG. 1

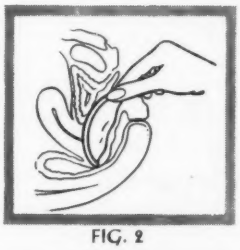


FIG. 2

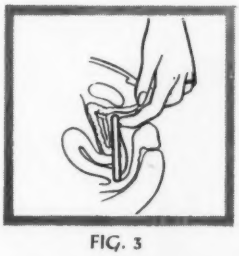


FIG. 3

1. Expressly designed to assure your patient ease of insertion and automatic placement.
2. Conserves physician's time by reducing fitting and instruction period.
3. Patients learn faster and develop greater confidence because of the ease with which they learn to place and use the diaphragm.
4. Affords greater patient protection by locking in spermicidal lubricant and delivering it directly under and next to the os uteri.
5. Folds behind pubic bone with suction-like action forming a more effective barrier.
6. Simple to remove.

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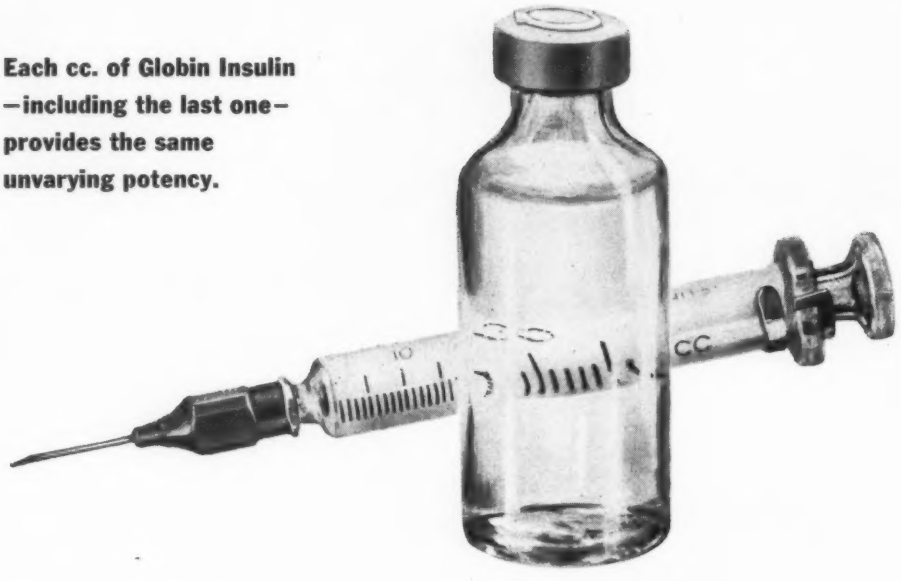

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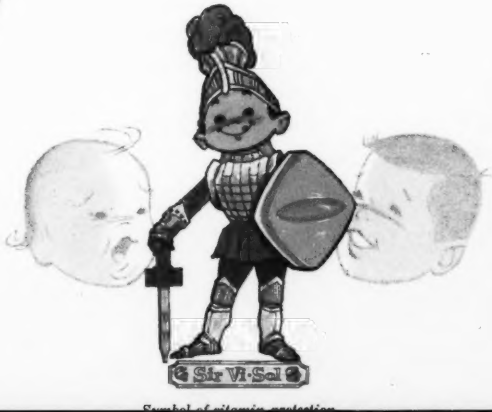

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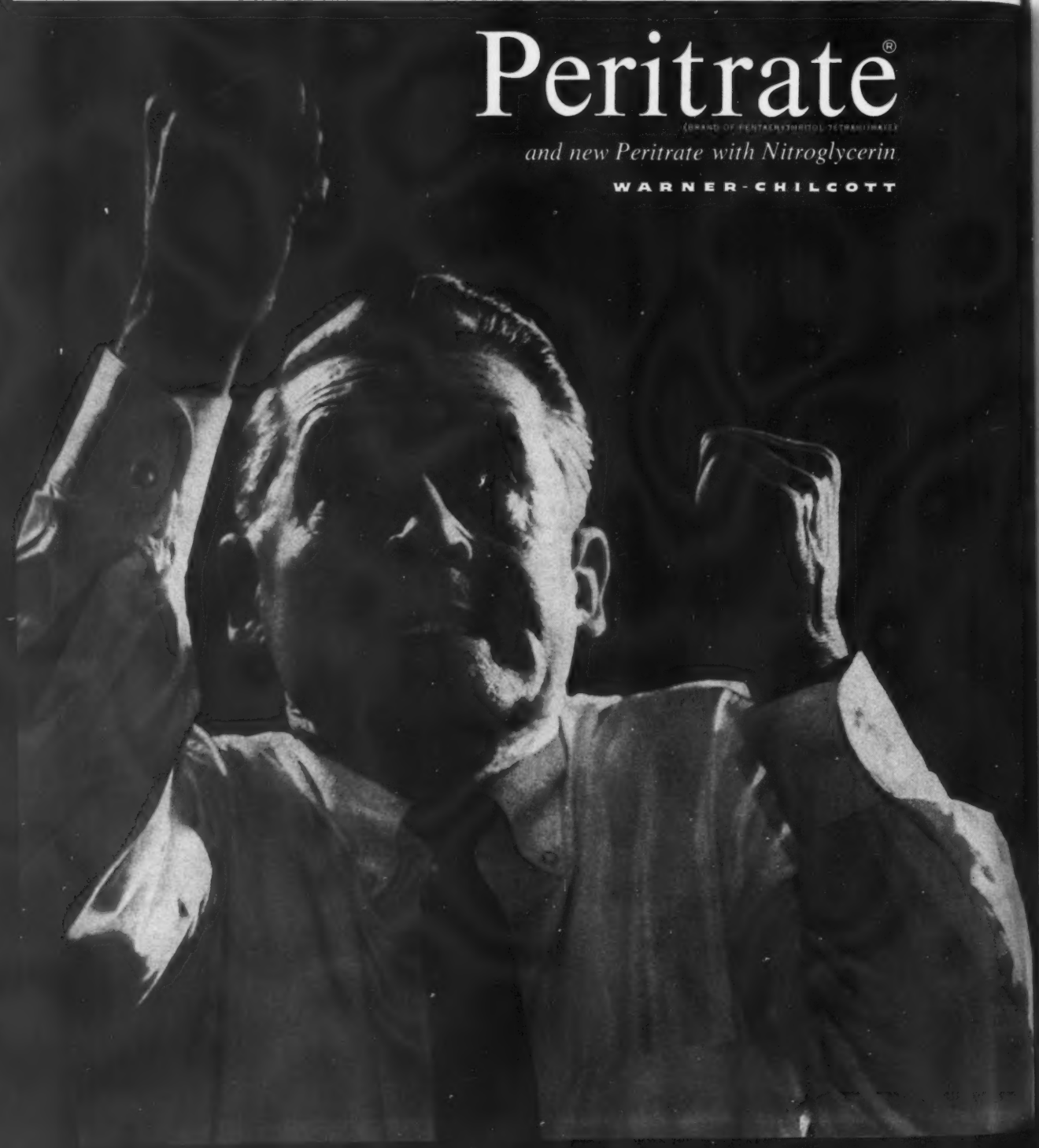

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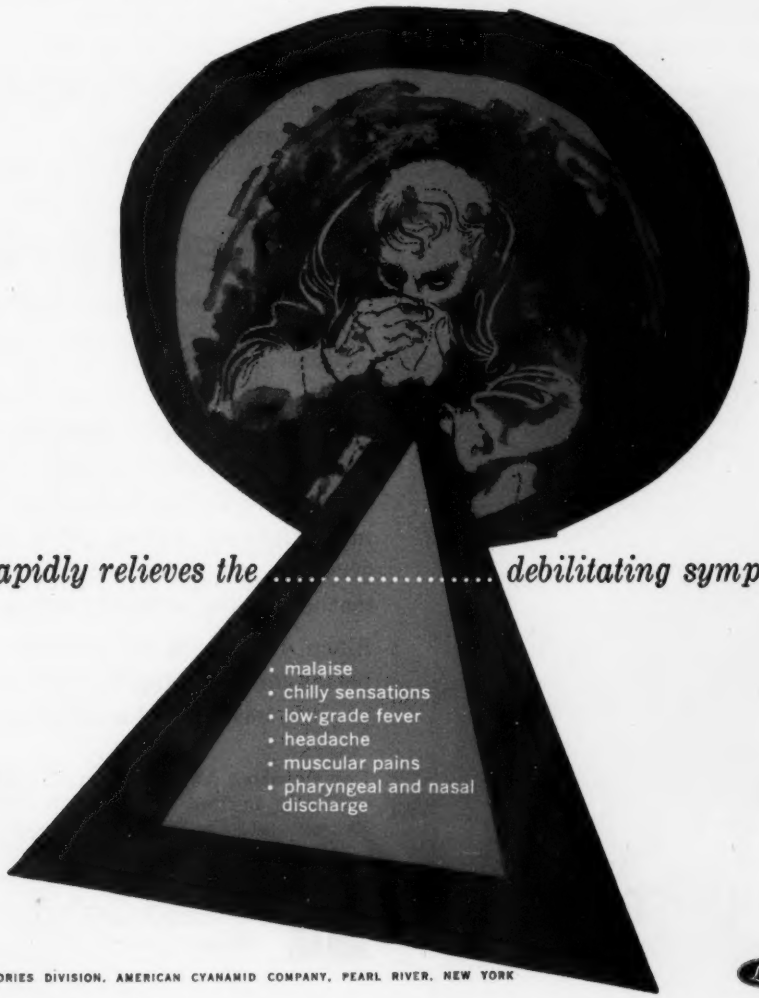

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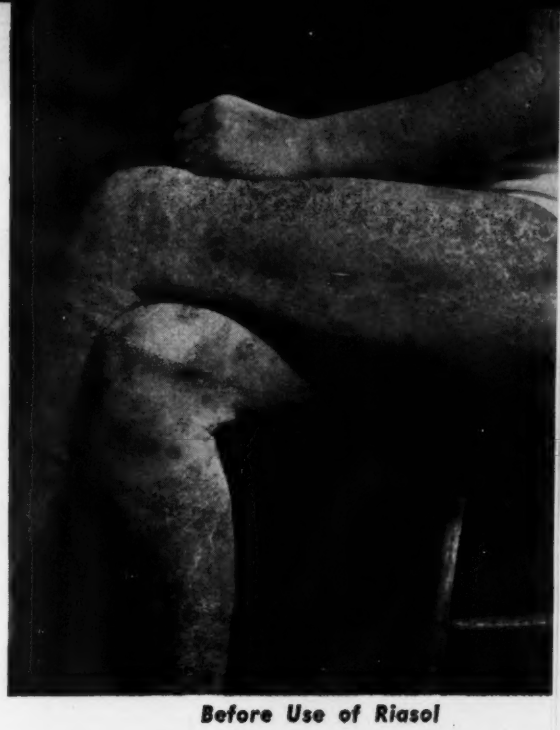

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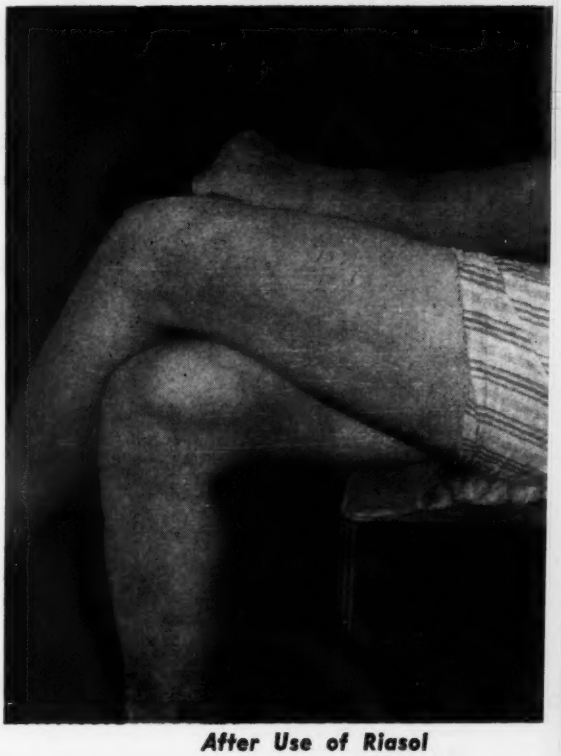

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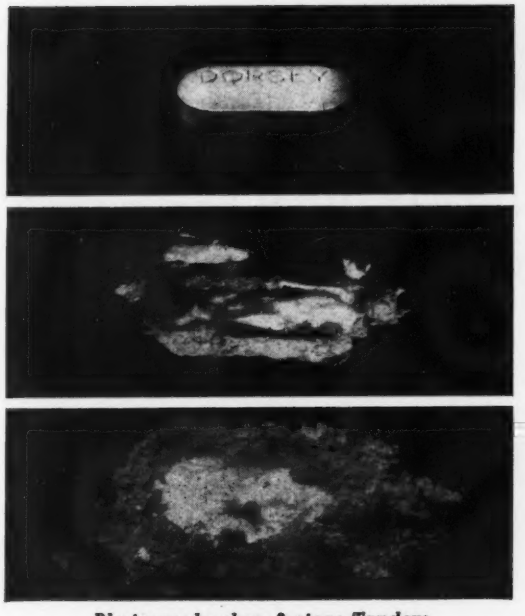

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References: 1. Report of Joint Committee, Medical Research Council & Nuffield Foundation, Treatment of Rheumatoid Arthritis, British Medical Journal (May 29) 1223-1227, 1954. 2. ibid. (April 13) 847-850, 1957. 3. Hart, D.; Bagnall, A. W.; Bunim, J. J., and Polley, F. H.: Ninth International Congress on Rheumatic Diseases, Toronto, Ont. (June 25) 1957. 4. Lewis, L., *et al.*: Ann. Int. Med. *39*:116, 1953. 5. Demartini, F., *et al.*: J.A.M.A. *159*:1505, 1955. 6. Segaloff, A.: Ann. Allergy *12*:565, 1954. 7. Kern, R. A.: Am. J. M. Sc. *233*:430, 1957.

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The JOURNAL of the AMERICAN OSTEOPATHIC ASSOCIATION

April 1958 Vol. 57, No.8

Moderator
W. DONALD BAKER, D.O., F.A.C.O.S.†
Los Angeles, California

Panel Members

VIRGINIA I. FOSTER, D.O.‡
Kirksville, Missouri

MORTON TERRY, D.O.§
Miami, Florida

EDWARD P. SMALL, JR., D.O.‖
Detroit, Michigan

STANLEY J. TURNER, D.O.¶
Highland Park, Michigan

WILLIAM T. BARROWS, D.O.#
Santa Barbara, California

Acquired INFLAMMATORY and DEGENERATIVE diseases of the CARDIOVASCULAR system

A panel discussion*

DR. BAKER: It is the aim of this panel to outline a new concept in the management of acquired inflammatory and degenerative diseases of the cardiovascular system. Cooperation between the surgeon, internist, cardiologist, radiologist, and pathologist is absolutely imperative for the proper handling of these problems. The day of the sometimes not-so-friendly competition between the specialist in internal medicine and the specialist in surgical technic has long since gone, and cooperation has taken its place.

It is not the intent of this panel to present an afternoon of agreement. I am sure there will be wide areas of disagreement. That should increase the interest and certainly should not detract from the benefits obtained from the presentation.

Perhaps the general field of cardiovascular disease does not seem too important to you. However, the fact that last year between 55 and 60 per cent of all deaths in the United States were direct results of cardiovascular disease makes it important.

There is a great revolution occurring in our approach to the problem. We no longer think of arteriosclerosis as the inevitable result of growing old. Even the individual already afflicted with it need not feel it is necessarily irreversible.

Another great field to be discussed concerns valvular disease of the heart. The child who is afflicted in early life with an undiagnosed valvular disease becomes the disabled adult suffering from the strictly mechanical problem of interference of circulation through the heart and lungs. That problem at one time was considered to be unaffected by any treatment, and the individual suffering from such a problem was believed beyond the scope of human aid. Now we know that many of these patients can be almost completely rehabilitated or there can be complete reversal of this process through proper treatment.

Actually the results in these cases depend on you. You must learn to recognize these disorders early, and you must develop an optimistic philosophy because now you have something to offer your patients. However, unless the case is recognized it cannot be treated.

The role of the general practitioner is becoming more apparent as time goes on. The patient who consults a specialist directly usually makes a mistake because that means self-diagnosis. Even the doctor who attempts to diagnose and treat his own disorders has a fool for a patient; this is doubly true when it comes to a nonprofessional. Therefore, the general practitioner should select the cases for consultation. When the case is referred to a specialist, the importance of the cardiovascular medical-surgical team becomes increasingly apparent.

I was introduced as a founder-member of the Susan Baker Memorial Cardiovascular Foundation. That started out 2 years ago with nine physicians who were interested in these problems, and its membership

*Presented at the Sixty-First Annual Convention of the American Osteopathic Association, Dallas, Texas, July 18, 1957.

†Dr. Baker is senior vascular surgeon at the Los Angeles County Osteopathic Hospital, professor of surgery at the College of Physicians and Surgeons, and a member of the American Osteopathic Board of Surgery.

‡Dr. Foster is pathologist at the Kirksville Osteopathic Hospital.

§Dr. Terry is head of the Department of Internal Medicine at the Biscayne Osteopathic Hospital, Miami, Florida.

‖Dr. Small is a radiologist at Detroit Osteopathic Hospital.

¶Dr. Turner is an internist at Detroit Osteopathic Hospital.

#Dr. Barrows is chairman of the Department of Surgery at the Civic Center Hospital, Oakland, California, and associate professor of Surgery in the graduate school, College of Osteopathic Physicians and Surgeons.

now numbers close to 200. Any member of the osteopathic profession is not only eligible but is invited to become a participant in this work, which is merely the honest reporting of results for statistical purposes. It consists of research programs and of educating physicians to the value and necessity of complete cooperation with one another in the handling of these problems. Today, Dr. Barrows and I would not think of attacking a surgical problem related to the great vessels of the cardiovascular system without consulting a trained cardiologist who has been working as part of our team; a cardiologist who understands his role in the care of these patients and who realizes that the maintenance of life during the operative procedure is just as much his responsibility as it is of the surgeon. The cardiologist and internist should select patients for surgery and cooperate with the surgeon in postoperative care. Without that cooperation mortality figures are much higher than they should be.

The panel has decided to introduce this subject by presenting hypothetical cases representing two different types of problems: The first will concern the aftermath of an inflammatory condition, and the second a degenerative problem.

The first case is that of a 45-year-old woman who has given a history of increasing difficulty in performing ordinary activities. She has reported dyspnea on even very mild exertion, a situation which has been gradually worsening over a period of several years. She has been admitted to the hospital with a tentative diagnosis of acute cardiac failure. Her past history discloses that she had an attack of chorea at the age of 12, and that for the next 10 years she had recurrent attacks of vague joint pains, low grade fever, and generalized malaise. On her second hospital day she experienced a transient attack of vertigo, numbness of the right arm, and dysphagia of 3 hours' duration; however, within 24 hours all these symptoms cleared. On the seventh hospital day she suddenly developed intense pain in her right calf with marked pallor and coldness of her right foot.

I will ask Dr. Terry to discuss the role of chorea in this case.

DR. TERRY: Chorea (Sydenham's chorea, St. Vitus' dance) is unquestionably rheumatic in nature and is essentially a manifestation of rheumatic fever in childhood. It is interesting that more than 25 per cent of all rheumatic fever patients have had chorea at one time. The condition occurs primarily in young females. Clinically there is constant, uncoordinated, purposeless muscular movement. The onset may be sudden after a period of stress, fright, or trauma, or it may be gradual. In cases with gradual onset the child becomes irritable, has insomnia and bedwetting, and is clumsy and trips over things. He becomes poor in schoolwork, even though investigation shows him to be intelligent. Usually these children phonate badly. In severe cases paralysis may occur with inability to walk and loss of sphincter control; sometimes death may ensue.

Diagnosis of the mild form is sometimes difficult to make, but a very simple procedure is helpful: Have the child keep his hands outstretched for a given length of time. At the end of this time the examiner can feel the compulsive jerks in the child's hands.

There is no specific laboratory test for this condition. The blood count generally is normal, although there may be some leukocytosis, and occasionally an abnormal number of eosinophils are reported.

The course of the disease is 6 to 8 weeks, as a rule. Recurrences are common, either as chorea or as typical rheumatic fever; in fact, the signs and symptoms of rheumatic fever may occur with the initial choreal attack.

There is a 3 per cent death rate in acute attacks of chorea, and it may be as high as 7 to 20 per cent in pregnant patients. There is no specific treatment, although steroids have been reported to be of some value.

DR. BAKER: Is there any test or procedure that the general practitioner can use for early detection of this problem?

DR. TERRY: I assume you are referring to early detection of rheumatic fever, which frequently presents problems in diagnosis. The typical case with migratory polyarthritis and "hot" joints is easily recognized by all; however, there are many different clinical courses. Aside from chorea, there may be the type associated with recurring abdominal pain which may even resemble appendicitis. The cardiac manifestations may be the first signs with the onset of chest pains. In general, there are joint manifestations, malaise, anorexia, and low grade fever.

There have been some recent advances in the laboratory diagnosis of rheumatic fever, but there is no specific test for it. There is moderate leukocytosis in most cases, and the sedimentation rate is sometimes increased, though it may be normal in the presence of congestive heart failure, in spite of persistent rheumatic activity. The C-reactive protein determination is diagnostically superior to the test for sedimentation rate. This is based on the flocculation of polysaccharides of the pneumococcus capsule. This precipitate is probably due to the beta gamma globulinemia which exists with rheumatic fever; its presence is both diagnostic and prognostic. Also, the fibrinogen content is usually increased in rheumatic fever.

None of these tests is specific, and all must be considered with the general clinical picture. There are other tests not available in all hospitals, such as serum mucoprotein determination, but there are three tests of which findings in at least one will be elevated in 95 per cent of all cases of acute rheumatic fever. These are: (1) hyaluronidase inhibitor which is present in increased amounts; (2) antistreptolysin titer which generally is over 250 units in acute rheumatic fever and may rise to 400 or 500; and (3) antifibrinolysin titer. Details of these tests are readily available.

I would like to present a classification by which Jones[1] says a diagnosis of rheumatic fever can definitely be made according to certain major and minor criteria. The major criteria include carditis, arthritis or arthralgia, chorea, subcutaneous nodules, and erythema annulare rheumaticum. Of the minor criteria the first group is general: malnutrition, pallor, fatigue, recurrent sore throats, epistaxis, abdominal pain, precordial pain, et cetera. The second group of minor criteria includes fever, leukocytosis, increased sedimentation rate, increase in C-reactive proteins, high antistreptolysin titer, high antifibrinolysin titer, and high antihyaluronidase titer. Jones claims that the presence of any two of the major criteria can be considered as positive for rheumatic fever. He further claims that if there are one major and two minor criteria, this is positive, particularly if the one major one is not arthritis or arthralgia.

DR. BAKER: Do you feel that the symptoms of the patient under discussion are directly related to the rheumatic fever episode?

DR. TERRY: Since a history of carditis is usual in connection with chorea, it may be judged that with repeated episodes of a rheumatic type throughout the years the patient has probably had repeated insults to

the heart. Carditis involves the myocardium, pericardium, and endocardium, and I would leave it to Dr. Foster to describe what actually happens to the heart tissue.

DR. BAKER: Dr. Foster, would you discuss the pathologic changes connected with a primary attack of rheumatic fever?

DR. FOSTER: Rheumatic carditis is actually a pancarditis involving the pericardium, myocardium, and endocardium. Pericarditis is found most frequently in children of about age 10, and is usually due to acute rheumatic fever. There is an exudate which is fibrinous or serofibrinous. As a result of the inflammatory process in the tissue of the pericardium, fibrin is laid down which ultimately may cause adhesions. The lesions of acute rheumatic fever, regardless of the area of body tissue involved, are somewhat similar, in some areas being more nodular and in others more diffuse. In the pericardium both tendencies are present. The nodular manifestation consists of a central necrotic core of typical fibrinoid degeneration with infiltration of inflammatory cells, and these lesions eventually become scarred. There also may be present the typical multinucleated cells of Aschoff. The exudate is usually small in amount, and with healing leaves few residua. But, if extensive, it may result in an adherent pericarditis due to production of a heavy layer of fibrous tissue which may ultimately calcify.

However, it is in the myocardium that the typical rheumatic lesion is found. It involves the interstitial connective tissue located in the paravascular area (that is, to one side of the vessel rather than surrounding it). It is a very small lesion and is often overlooked. The lesions in the myocardium are nodular but widespread and are mainly responsible for the myocarditis which develops.

Endocarditis occurs in a majority of cases. Valvulitis is one of the most dreaded manifestations of carditis because of deformity of the valves which results. The endocardium of the auricle, particularly the left auricle above the mitral valve, is often the site of an inflammatory lesion which may form a nidus for Streptococcus viridans, and ultimate development of subacute bacterial endocarditis. In the beginning the valves are red and swollen. As a result of acute inflammation the valves gradually become adherent to each other. In some cases small vegetations are formed. The underlying inflammatory process reaches the endothelium, resulting in erosion of the endothelium, and it is upon these raw surfaces that the vegetations are implanted. These vegetations are composed of platelet thrombi; they are very small, measuring 1 to 2 mm. in diameter, and are closely adherent, so they are not easily detached. Therefore, embolism is not seen in rheumatic carditis due to these lesions. They are arranged in a line along the line of closure of the valve leaflet. As the process proceeds, organization takes place. There is also involvement of the chordae tendineae, which become very fibrous and shortened. As organization proceeds, the vegetations merge with the thickened valve cusps, resulting in contraction and retraction of the valve leaflets. The shortening of the chordae tendineae contributes to the alteration which takes place in the valves. As the process gradually proceeds, calcification may occur, and the total result is acute inflammation progressing into chronic organized fibrosis and calcification with shortening of the chordae tendineae, resulting in improper or failing function of the valves so that there is both stenosis and incompetency. The degree of stenosis varies, but in extreme cases the valve orifice is a mere slit with the characteristic fish-mouth or button-hole deformity. It is at this stage of chronic valvular disease that the hypothetical patient is developing her symptoms.

The cardiologist and internist should select patients for surgery and cooperate with the surgeon in postoperative care. Without that cooperation mortality figures are much higher

DR. BAKER: Care of this patient would be in one of three categories: The first would have been prevention; the second would be treatment of the acute episode that has necessitated hospitalization; and the third would be prevention of sequelae of the disease. Assuming that modern means of therapy were available when this patient was 12 years of age, what might have been done to alter the pathologic process that has been described?

DR. TERRY: Generally, each recurrent attack of rheumatic fever is characterized by increasingly severe carditis. Apparently the diagnosis of rheumatic fever was not suspected in this patient; therefore, the bed rest and other general measures necessary to help prevent further pericarditis were not followed. In prophylaxis, vigorous antibiotic therapy will clear the initial streptococcal throat and other infectious foci. Once this is done, prolonged treatment may be instituted with the use of a sulfonamide or penicillin. Both of those are in current use and have done a dramatic job in reducing recurrences of rheumatic fever. Sulfadiazine or a sulfonamide compound such as Gantrisin may be given in the amounts of 0.5 grams daily to children under 60 pounds of weight and 1 gram to children over 60 pounds, around the year. Penicillin in a single oral dose of 200,000 to 500,000 units may be given daily around the year to the child with rheumatic fever. Since the advent of Bicillin, many give a single dose of 1,200,000 units once a month, and this is thought to protect the patient satisfactorily.

DR. BAKER: Which do you prefer?

DR. TERRY: It depends primarily on the patient. If he will take the penicillin daily and not miss a dose, and if the family is intelligent and cooperative, this may be the better way. But there are cases where perhaps 12 injections a year might be better. Treatment is continued for 5 years after the last rheumatic fever attack or until the patient is 25 years of age. I should also mention that some people give steroids during the acute attack to prevent much of the carditis which would ordinarily follow.

DR. BAKER: Would you briefly outline your method of handling the patient who is admitted to the hospital in acute failure?

DR. TERRY: The average physician is familiar with the use of digitalis and mercurial diuretics, and the necessity for salt restriction. There are several classifications of patients besides the type presented as a hypothetical case. This patient's symptoms and history would suggest that she is a grade III. Grade I means there are no symptoms; in grade II there are symptoms on considerable exertion; in grade III there are symptoms on mild exertion; and in grade IV there are symptoms at rest.

The pathologist in this panel discussed what the lesions were, and I think we should take a moment to discuss the mechanism of this condition. The valve lesions cause stress on the individual chambers of the heart; these heart chambers then hypertrophy as any muscle does and go into failure. Perhaps Dr. Small should show us some of the deviations in chamber enlargement.

DR. SMALL: A patient who is to be examined represents one of several levels of his condition. He may or may not be well enough to be examined in the upright position. He may have to be examined at the bedside with portable x-ray equipment, but of course the findings elicited in this manner would not be as accurate as if he were brought to the department.

At any rate, fluoroscopy is an extremely important part of the examination; it should demonstrate the pulmonary fields and the cardiac silhouette. Roentgenograms are also of great assistance in arriving at a diagnosis, and they are further valuable as part of the patient's permanent record.

What do we expect to find in this hypothetical patient when examining her under the fluoroscopic screen? We expect to see an enlarged heart, with certain chambers enlarged more than others. For this examination it is imperative that the esophagus be filled with an opague material such as barium sulfate or Rugar, a thick substance which passes down the esophagus slowly and adheres to the mucosa long enough to allow fluoroscopic examination and subsequent roentgenographic examination. Under the fluoroscopic screen the patient is examined in various projections. In the anteroposterior projection the esophageal column may be deviated to the patient's right side, which fact tends to suggest the possibility of left auricular hypertrophy, a pertinent finding in a case of mitral stenosis. Possibly the lung fields show change in varying degrees, and there may be vascular congestion. Then the patient is rotated to the right anterior oblique position, with her right shoulder closest to the fluoroscopic screen. In left auricular hypertrophy the barium column would bulge in a posterior direction, away from the hypertrophied auricle. The right ventricle may show signs of hypertrophy and may tend to fill the retrosternal space. If there are regurgitant changes, there will be some left ventricular hypertrophy which is best demonstrated in the left anterior oblique projection, where the ventricle may override the spinal column. The same situation occurs in the lateral projection. That is what is called a chamber study or examination for chamber determination.

. . . we must evaluate our patients

to determine what would happen if

there were no operative intervention

Opaque material in the vascular structures is not of too much value in this case. We have not used it to any significant degree in our institution.

In summary, in a chamber study the anteroposterior projection might show cardiac hypertrophy with enlargement of the pulmonary conus; protrusion of the right side of the heart to the right; and increased density in the lungs fields, particularly in the region of the right hilum, denoting a certain amount of pulmonary congestion. The right anterior oblique projection might show protrusion of the barium-filled esophagus in a convex manner posteriorly which indicates that there is left auricular hypertrophy. The left anterior oblique projection may give a false impression of left ventricular hypertrophy when the right ventricle is so grossly hypertrophied that it protrudes backward and pushes the left ventricle over the spine.

DR. BAKER: After there has been pathologic change and there is valvular deformity, the physician faces the problem of treatment of the condition. Great strides have been made in this direction in the past 10 years. You who are statistically or historically minded will remember that it was not until 1948 that Dr. Charles Bailey[2] of Hahnemann Hospital in Philadelphia performed the first successful mitral commissurotomy. He had performed four unsuccessful ones in the preceding years. He lost some patients because of technical difficulties, but more often the problem was a lack of adequate postoperative care. Like all pioneers, he had no one to guide him in selection of cases; so there inevitably would be some sacrifice of life. But before we take up the surgical phase of this problem I would like to ask a question: Dr. Terry, other than prophylaxis or treatment for the acute rheumatic fever phase and other than the control of the symptoms of acute cardiac failure, what do you feel the cardiologist or internist has to offer in the treatment of rheumatic valvular disease?

DR. TERRY: We are in a fabulous era as far as the treatment of valvular heart lesions is concerned. In such a patient as has been described, who is essentially class III at age 45, there should first be further physiologic evaluation to establish the exact nature of the valvular lesion and to determine whether or not this lesion is considered amenable to surgical correction or relief. Dr. Barrows would be the one to discuss operative care of these cardiovascular lesions.

DR. BAKER: Since the audience in general is not primarily interested in the details of surgical technic, I shall ask Dr. Barrows to present the over-all description of an operation for acquired valvular heart disease, the reason for performing it, and the general picture of the altered hemodynamics of the intracardiac circulation due to valvular obstruction or regurgitation. Perhaps he will also tell us what hope may be held out for these people.

DR. BARROWS: Since the early days when Dr.

Bailey lost four out of his first five patients with mitral valvulotomy, this surgical procedure has been improved in competent hands until it now carries approximately the same mortality rate as appendectomy. Those of us who have been in practice long enough can look back and recall the feeling that existed 25 years ago about the advisability of removing the appendix. We can remember the arguments that went on for years about total versus subtotal hysterectomy. Now we must decide the value and applicability and desirability of doing surgery on the heart and in its chambers.

In order to decide what treatment to use, we must evaluate our patients to determine what would happen to them if there were no operative intervention. What would be their life expectancy? The discussion up to this time has brought out very clearly that the effects of rheumatic fever on the valves of the heart are progressive, at least to a point. It has not been indicated clearly that at some stage, either when treatment is effective enough or resistance increases or the virility of the bacterial process decreases, there may be an arrest in the progressive changes. This perhaps explains why a person who had rheumatic fever as a youngster could have only mildly impaired function as compared with a person who shows steadily increasing changes.

DR. FOSTER: There are cases of rheumatic endocarditis which do resolve at various stages. The process may stop anywhere along the way, but recurrent attacks of carditis are common.

DR. BAKER: Many times there is a difference between what we hear through a stethoscope and what actually is present. Surgery has proved that the loudest of the murmurs frequently denotes the least defect, and some of the most gross defects produce some of the softest murmurs.

DR. TERRY: Am I right that some of these cases may have restenosis after surgery?

DR. BARROWS: Surgical correction of these valvular lesions may be good or bad, complete or incomplete; the answer to the question is that restenosis may occur, but the percentage of cases in which it happens will decrease as experience allows for better selection and preparation of patients and better surgical technics. However, even though a patient should suffer restenosis, a second operation may be performed. Because the procedure has been performed once does not mean that that is all the good you can do for the patient. It is also known that restenosis may occur if the individual was young at the time of surgical intervention or if there is a flare-up of active rheumatic fever with restarting of the same pathologic process that caused the disease in the first place. If the stenotic process is completely under control or burned out, the recurrence would be less likely.

But to continue with the discussion of modern-day treatment for valvular heart disease: The first valve that was successfully attacked surgically was the mitral. Pure mitral lesions are not as common as we surgeons wish they were, because mitral valve surgery is the kindergarten of intracardiac surgery and carries very low mortality and morbidity rates.

What do we mean by mitral lesions? If we were to look into the left auricle and down at the mitral valve, instead of having two leaves that open and close we would find the opening stenosed to a size something like a lead in a pencil. Adhesive, fibrinous calcifications or bands would be binding the leaves together in addition to involving the chordae tendineae below. The purpose of operation is to relieve stenosis by freeing the anterior and posterior commissures to allow more free movement of the valves. Why? It is a matter of mechanics. When mitral stenosis is present there will eventually be enlargement of the musculature of the left atrium to force the blood through the stenotic opening. The pulmonary veins empty into the atrium and, because of increased intra-atrial pressure, there will be a backing up of blood into the pulmonary vessels, producing a pulmonary hypertension which in turn results in congestive failure. The myocardium eventually becomes weakened and fails to compensate, and we reach the end result of the problem. Most times there is some regurgitation through the stenosed valve. The purpose of operation is to relieve the stenosis by opening along the natural cleavage line, taking care not to create a regurgitation, because the difficulties attendant on a mitral regurgitation are even worse than those of mitral stenosis.

Many times there is a difference between what we hear through a stethoscope and what actually is present

Surgeons did not originally pay much attention to the little projections from the right and left atria which are called the auricular appendages, but more recently they have been regarded with considerable interest. By putting a purse string around these and controlling by clamp, the finger may be introduced into the left atrium and the valve explored. If the adhesions are not too firm, the splitting of the adhering anteroposterior commissure may be accomplished by finger only. If this is not possible, there is available a commissurotomy knife which fits into the palm of the hand and can be introduced with the finger, and the valve opened. The auricular appendage can be sacrificed. It is closed over with sutures, and the patient is then returned to the care of the cardiologist.

The frequency of multiple valve lesions is being recognized as more and more hearts are explored, and here is where teamwork becomes necessary. In our hypothetical case of a grade III involvement, the clinician must first control the impending and actual failure. He must get the patient's chest dried out, the nutrition built up, and the electrolyte balance evaluated. Then he consults with all his colleagues to decide whether this is a pure mitral lesion or a combination of many lesions. Here the services of the radiologist are valuable. Cardiac catheterization is a most valuable procedure; it is quite simple and will give data which will help us to evaluate the patient in order to plan the best surgical procedure. If we know there is a coexistent aortic stenosis and/or aortic insufficiency and/or tricuspid valve involvement, the surgical approach must be planned to cope with all these problems. It is not unusual to correct three different valves at one time, but the approach must be planned accordingly.

This brings up the fact that rheumatic fever and

other changes in the heart are not diseases selectively affecting the mitral valve only. The aortic valve is frequently involved, and the increasing amount of tricuspid difficulty being found would lead us to believe that lesions in this area have hitherto been unrecognized. There is now available an operative procedure in which the heart chambers are approached posteriorly from an incision in the right side of the chest, and the tricuspid and mitral valves can both be corrected through this approach.

Aortic valve surgery has been undergoing changes. The original approach to stenotic lesions of the aortic valve was through the left ventricle, in spite of the degree of pressure in this chamber. But aneurysm of the left ventricular muscle wall was a problem to be reckoned with, and extreme hemorrhage at the time of operation was a problem, so other methods of approach were developed. The Bailey group[2] devised a way of using pericardium to create what would correspond to the auricular appendage. This artificial appendage is sewn onto the aorta above the aortic valve and an incision is made in the aorta, allowing the finger to be introduced. The suture is then tightened around this pseudo-auricular appendage to allow surgery to the aortic valve from above. While that is a rather long operation, it was an improvement over the original approach. In the last few months, open cardiac surgery has become more common; there are many good cardiac surgical teams now using this approach. This technic necessitates the use of the artificial heart-lung machine through which the patient's circulation can be routed while the heart is stopped. These machines have been improved and are now within the financial reach of most hospitals.

A deterrent to open cardiac surgery has been the need for large amounts of blood to prime the heart-lung machine; it used to be necessary to have 30 pints of blood available, and blood banks have had some difficulty in providing this amount. However, the newer apparatus requires a much smaller amount—5 to 6 pints unless there is some unexpected loss.

The day is gone when the internist was satisfied to have his cardiac patient spend most of his life in bed and die in an "excellent state of digitalization"

This newer procedure makes it possible for the surgeon to see exactly what he is doing rather than working blindly in a chamber that is still pulsating and through which the blood is circulating at a fast pace. Both lesions of regurgitation and aortic stenosis are now better corrected through this open approach.

The same principles of surgery apply to the tricuspid valve as to the mitral.

There are several important points in evaluating the patient for surgery: (1) Be sure of the type of lesion that is present. (2) Have reasonable assurance that medical therapy has nothing more to offer the patient. (3) Be sure that without operation the patient's condition would progressively worsen, his life expectancy would be shortened, and he would become incapacitated.

The day is gone when the internist was satisfied to have his cardiac patient spend most of his life in bed and die in an "excellent state of digitalization and electrolyte balance." That was all we had to offer a few years ago, but it is not all that we have now. With teamwork in deciding on a surgical procedure, and cooperation in postoperative treatment of these sufferers, prospects for their rehabilitation to a good life are improving all the time.

DR. BAKER: I want to say a few words about the final complications which were described in the hypothetical case. On her second hospital day, the patient had a transient episode of vertigo, numbness of the right arm, and so forth. That description was included to illustrate the fact that whenever a heart has failed and there is interference in blood flow through any chambers of the heart, clots can form. When clots are present, the very treatment designed to bring the patient out of failure will frequently cause the clot to be dislodged and produce embolism. The hypothetical patient suffered first from a cerebral embolism. As yet there is no satisfactory surgical approach for that, and medical therapy is entirely supportive. On the seventh hospital day, this patient suffered from separation of another clot, possibly because anticoagulant therapy was not maintained, or because of another episode of failure, or for one of many reasons. That emphasizes the fact that simply because the patient has one crisis, it does not mean he has passed the only barrier he will encounter.

This patient suffered from a peripheral arterial embolism in the popliteal artery. Emboli which are discharged out over the arch of the aorta will lodge at the aortic bifurcation, at the junction of the iliac and femoral vessels, or in the popliteal area. Roughly 25 per cent of them lodge in the popliteal area, and when this occurs the circulation of the lower leg is very dramatically shut off. Unless something is done immediately, the patient may lose his extremity. Patients are usually not in a hospital when this happens, and it is usually the general practitioner who sees them first. He often listens over the telephone to the story of sudden pain and of coldness and numbness and decides that the patient has had a stroke. He gives certain instructions and waits for morning to see the patient, but by that time he has signed the death warrant for his patient's extremity. Successful treatment depends upon minutes or hours at the most; the great majority of patients must be surgically treated within 8 hours. So we must consider that in this day of the artificial heart-lung apparatus, and with surgical invasion of the heart and great vessels all over the body a reality, and sometimes so simple a procedure that it can be done under local anesthesia, surgical procedures could save the patient's life or leg.

We must think of the possibility of embolism whenever we have a patient who has any type of cardiac disorder. The patient who is treated for popliteal embolism by applications of hot water bottles and by elevating the extremity has that extremity doomed within a few hours. The patient treated by bed rest and anticoagulants and cold packs may have the time extended a short while. In fact, I have performed a successful embolectomy some 36 to 48 hours after the onset when the patient was treated properly at the time, but time is always of the essence.

Our second hypothetical case is a 35-year-old male patient whose presenting complaint is increasing difficulty during the past few years in maintaining proper sexual activities; he is able to have an erection but is unable to maintain it during the coital act. He also states that after walking a short distance he develops pain and discomfort in both hip areas and sometimes in the lower back, but this pain goes away if he stops walking. The pain is not present during ordinary activities, such as getting up, changing position, and moving around. He also states that his difficulty in maintaining an erection is considerably lessened if he takes a much less active role during coitus.

This diagnostic problem is not a rarity; its underlying cause is being recognized much more frequently than formerly. A diagnosis could almost be made from the facts which I have given you. We will start the discussion by asking Dr. Turner to tell us what would be his presumptive diagnosis in this case and to discuss the etiology.

DR. TURNER: There are certain diagnostic clues which can be derived from the history. This is the type of patient who, because of his age, would bring to the physician's mind the possibility of psychic impotence. This impotence in a 35-year-old man is not due to any organic disease according to the usual concept of what can occur at that age, and so he may be treated psychologically for a long time without improvement. Organic disease producing sexual impotence is of one type only; it is of vascular origin. It is never of endocrine origin, and that is important to emphasize. Individuals who have tumors of the testis which require removal with insertion of a prosthesis within the scrotal sac are capable of complete consummation of the marital act, but of course the spermatic fluid is sterile. These things are important to know. The individual who has claudication during sexual intercourse and is unable to achieve a climax has a diminished blood supply. As soon as the blood supply becomes inconstant and inadequate, the organ loses its erectile capacity. The lesson learned here is that one who has vascular insufficiency should not be a sexual athlete.

The problem of impotence may very well be the presenting complaint for this condition. Very often a man is more concerned about this than about his inability to walk. Other presenting complaints are low-back pain, pain in the gluteal regions, weakness of the legs, and fatigue. The average physician is familiar with intermittent claudication; he realizes that it usually presents a serious vascular problem. He knows also that lesser degrees of vascular insufficiency will produce symptoms that are evanescent and not readily definable in terms of their cause. The patient suffering from this condition may have weakness of his extremities and a sense of fatigue. He may say that he has to sit down frequently to rest. His first complaint usually is not of pain in the hips or legs but just that he is tired; on inquiry this fatigue is specific. Since it is related to the low back and since it may occur in the hip region, the physician begins to look for osteopathic and osseous lesions. We feel sure that this man, at the age of 35, does not have hardening of the arteries.

Figure 1

As an index to vascular disease the physician may look at the skin. The skin turgor may be good; the hair may be well distributed; the nails may not be thickened or curled; and the doctor may feel sure that this individual does not have vascular disease. However, if he palpates for arterial pulsations, the nature of the problem becomes apparent. Many physicians palpate first for the dorsalis pedis, and if they fail to palpate that, they say that the individual has peripheral arterial disease. But 16 per cent of all white males and females have no dorsalis pedis pulsation. He may then check the popliteal area, but he must remember that 25 per cent of all Negroes have no palpable popliteal pulsation. But there is only one disease process that causes an absence of pulsation in the femoral artery, and that is occlusive disease of the femoral artery or of arteries above that site.

That man in the hypothetical case, with his history of impotence and fatigue on walking with relief on resting, presents a typical picture of obstructive arteriopathy with blocking in the lower region of the aorta, that is, at the bifurcation.

Of what value are oscillometric readings in this case? The obstruction may be incomplete, in which case there may be faint pulsation or none at all, and yet enough blood may be getting through under pressure to produce a change in the oscillometric readings. The collateral circulation is usually good so there will be no blanching of the skin and no trophic changes.

These lesions can be specifically and clearly defined by angiography.

DR. SMALL: When angiocardiography is properly performed, it is of utmost value. The procedure involves injection of a contrast medium directly into the aorta; the choice of medium depends upon the user. The needle is usually inserted in a translumbar space above

It is very encouraging to note that . . . arteriosclerosis may be a reversible process . . . because there is not a person . . . who will not experience this pathologic change if he lives long enough

the level of the suspected point of involvement, with the patient lying prone. When the operator is sure the needle is in the aorta, he attaches a syringe containing the contrast medium and injects it fairly rapidly. If the radiologist has available serial casette changes, he employs them; if not, he uses the single film method and times his exposure for the minute when the vessel in question will be best demonstrated.

It would be well to mention some of the dangers encountered in this procedure. The first is hypersensitivity of the patient to the dye. Often there is no reaction to a test dose, which usually consists of 1 cc. of the contrast medium given intravenously. If there is hypersensitivity, the reaction will range from a small urticarial lesion to some degree of anaphylactic shock. Depending upon this reaction, we are guided as to whether or not the procedure will be carried out. The second danger is renal damage. If the needle is injected directly into a renal vessel, certain things may be expected to happen. There will be tubular atrophy at a later date, as well as interstitial fibrosis of the kidney, or glomerular hyalinization. If the needle is not properly placed in the aorta and blood is allowed to extravasate into the perivascular region, a hematoma may develop which may be large enough to surround, occlude, or cause pressure upon other vessels or viscera. The third danger is that injection directly into the celiac artery will result in pancreatitis, fatty necrosis, or degeneration of the pancreatic tissue.

Figure 1 is a slide of a patient with vascular occlusive disease. The needle was placed at the third lumbar space and opaque material injected and diffused downward. On the left side the common iliac and its branches are well visualized, but on the right side the common iliac is practically completely occluded and there is marked evidence of collateral circulation. These findings of vascular occlusive disease are in all probability producing the symptoms discussed by Dr. Turner.

DR. BAKER: I believe we have established that this patient has a form of atherosclerosis resulting in occlusion of the bifurcation of the aorta. That, of course, has shut off the blood supply to the internal iliac system as well as to the external system. We will now ask Dr. Foster to present the pathologic manifestations of atherosclerosis.

DR. FOSTER: Atherosclerosis may occur in generalized or segmental form. It is a nodular or haphazardly distributed degenerative disease of the arteries. The degeneration is most frequently seen at bifurcations or branching of a vessel, and at points of fixation where there is more stress. The lesions are composed of plaques in which there is subendothelial proliferation covered with endothelium and later atheromatous material composed of cholesterol crystals and other lipoid substances. As the condition progresses, roughened, ulcerated surfaces are produced upon which thrombi may form. However, the vessel may be considerably narrowed without the presence of thrombi because of the protrusion of the atheromatous plaques into the lumen. In the case under discussion the symptoms may be due to nothing more than poor circulation as the result of considerable narrowing of the vessel lumina. If thrombi develop, organization, with fibrosis and recanalization, may occur. The atheromatous or atherosclerotic process is the same, regardless of the vessel involved, but it is important to point out that the segmental form may affect one artery or a small segment of the vessel and may be seen at the bifurcations of vessels and at points of fixation where there is considerable stress.

DR. BAKER: At the present time we are working on a research project with the cooperation of the Donner Laboratories. They have done work on the atherogenic index and the predetermination of the individuals likely to develop atherosclerotic lesions, particularly those likely to develop coronary atherosclerosis. They are intensely interested in some of the arteriograms by which we have been able to demonstrate some of these obstructive lesions. If the concept is correct that atherosclerosis is reversible and if we can by proper medical treatment reverse these processes before they reach the stage of total occlusion we may be able to prevent development of a lesion which requires surgical correction, or we may be able to prevent an amputation. The purpose of the tests is to make up a volumetric determination from the arteriograms of the varying degrees of impingement upon the lumen of the vessels as compared with normal and also to show the index of obstruction. When these things can be determined, the patient can be placed on a controlled therapeutic regime. Six months or a year later repeat arteriograms will be studied, measuring the degree of obstruction and determining the index of obstruction. We can then tell whether our therapy has been effective in reversing the process or whether the process has gone on to complete obstruction.

Now I should like to call on Dr. Turner to discuss the therapeutic approach to the problem of atherosclerosis.

DR. TURNER: Obviously there is no medical management for the case described; so it leads us to a consideration of the surgical management. It is very encouraging to note that atherosclerosis or arteriosclerosis may be reversible. Even if the lesion has become calcified, there is a possibility of removing the colloidal ingredient from the blood stream; this decalcifies the lesion and sometimes totally removes the block. That is an exciting bit of information because there is not a person in this room who will not experience this pathologic change if he lives long enough.

Two indices are available today to evaluate atherosclerosis before the disease becomes clinically obvious. One opinion is that the lipoproteins are responsible for the development of atherosclerosis, while another is that cholesterol content is an index of decreased fat

metabolism and thus of a tendency toward development of atherosclerosis.

In all fields of medicine, we are developing the attitude that prevention is much better than any cure we could institute; so we are interested in determining the presence of this disease before it manifests itself by symptoms. We are interested in finding the individual who may develop coronary occlusion before it occurs. We know certain things about these people: they are usually male, or are females who are in the postmenopausal period or who have had oophorectomy; this follows what is known of the relationship of estrogen to the production of atherosclerosis. The males who develop this condition are usually the aggressive, muscular, obese type, particularly individuals who are under stress and tense or are on a high lipid diet. Individuals in prison camps have a very low rate of atherosclerosis, but when returned to a normal home environment they may develop atherosclerosis and coronary occlusion.

Since it is known that a diet rich in hydrogenated animal fat may be a factor in this disease, the tendency has been to control the development of atherosclerosis by the institution of a diet low in animal fat. This has been successful in only a limited number of cases.

How will we treat these patients in the office? One technic for detecting early atherosclerosis has been devised, using the atherogenic index. This utilizes a refractory index which is economically quite feasible and is acceptable and accessible to most. If this index is elevated, the serum must be centrifuged to determine for proper therapy which class of lipoproteins is involved. If it is found to be normal or below, we can assume that the individual has a low potential for atherosclerosis. If the individual has an elevated index, then it is necessary to determine which fraction is involved. Certain cases will need only dietary control. The individual must be given a normal complement of calories for his specific metabolic needs. All individuals must be allowed a diet containing 15 per cent fat. They cannot be put on a fat-free diet, because they will develop their own endogenous fat. This fat should be provided in the form of the dehydrogenated fats in vegetable oils such as corn oil and soybean oil.

If the individual has a very high cholesterol value, he may be given a cholesterol blocking agent. It is possible to lower the cholesterol values dramatically but increase the atherogenic index, and so just lowering cholesterol levels is not sufficient and gives a false sense of security. What is the best agent to lower cholesterol levels? Beta sitosterol is the best because it blocks absorption of cholesterol. As you know, cholesterol is manufactured in the liver, excreted into the gastrointestinal tract, and then reabsorbed; but very little enters directly into the hepatic circulation. So beta sitosterol will successfully block reabsorption of all exogenous cholesterol and about 80 per cent of the endogenous form.

What are the serum lipid clearing agents? Experimental studies indicate that heparin is the most effective agent for lowering turbidity after a high fat meal, and it will appreciably alter the lipoproteins which are important in the production of atherosclerosis. How is heparin given? It cannot be taken by mouth; it must be given by injection. There are several methods which can be used. It may be given intravenously three times a week in doses of 100 mg., but I think the subcutaneous route is just as satisfactory and easier to use. One type of heparin may be given intramuscularly; unfortunately, this is painful and the preparation is expensive. The concentrated aqueous heparin can be given subcutaneously and will increase the clotting time for a period of 18 to 24 hours; it is relatively innocuous and has a marked serum lipid clearing potential. It should be given in 200 mg. doses twice a week for good results. I think it is perfectly good technic to instruct the patient on how to administer the heparin himself. He can be taught just as a diabetic is taught to administer insulin to himself.

There are other lipid clearing agents that have a vasodilating effect. If there is peripheral endarteritis causing skin changes, I would select one of the nicotinic acid preparations. The best is a proprietary preparation called Roniacol, the alcohol corresponding to nicotinic acid. It will drop the protein level and will act as a cutaneous vasodilator. Since it is not activated by the acid juices of the stomach it can be given 30 minutes before meals. The dosage is 50 mg. four times a day.

I think before we discuss the dilating agents we should have Dr. Barrows give us the surgical implications and procedures for correction of the case under discussion.

DR. BARROWS: Procedures for surgical correction of this condition have been available for somewhat over 10 years. It is accomplished by using one of two primary procedures: The first is thromboendarterectomy in which the artery is clamped above and below the point of obstruction. The artery is then opened longitudinally through the obstructed area, and the intimal and subintimal tissues peeled out. There is a definite line of cleavage which makes this possible. A core of yellow, hard material is removed, sometimes containing a clot, and the media and adventitia are left *in situ*. The continuity of the artery is reconstructed with silk sutures placed close together to bring the raw edges to the outside. The distal clamp is removed first to allow the repaired artery to fill with blood; then the proximal clamp is removed, and the operation is completed.

The procedure is applicable to many segments. Some vascular surgeons feel it should be reserved for an occluded segment not over 6 cm. in length, but we have used it in segments considerably longer than that, up to 10 to 12 inches. However, in such long obstructed areas we use a homograft from an arterial bank or a prosthesis, the best of which is a crimped nylon tubing. These have many advantages over the homograft. Dif-

. . . prevention is much better

than any cure we could institute;

so we are interested . . .

in finding the individual

who may develop coronary occlusion

before it occurs

ferent states and counties and cities have varying laws concerning the storing and availability of arterial grafts, and in some localities the law enforcement agents have decided that their use is illegal, since a person cannot will his arteries. The nylon artery grafts can be carried about with one. They come in various sizes and are already made up for various locations. For example, there is available a Y-graft for the aortic bifurcation, and in the future they will be made with renal arms so that the renal arteries can be anastomosed when necessary. The obstructed segment can then be replaced, using a nylon graft in an end-to-end procedure. These prostheses are useful in lengths as long as from the aorta down to the popliteal artery. The long grafts are used when there is almost complete obstruction of the femoral or iliac arteries but the popliteal or posterior and anterior tibial branches are open. They were used on experimental animals and were studied for a certain period. The animals were then killed and autopsy showed that a pseudointima grows down the graft and lines it. Fortunately, there is no tendency for atheromatous plaques to form within this pseudointima.

By using imagination one can foresee the eventual use of nylon in the arteries from the coronary down to the popliteal, as the vascular system wears out. There are very few locations that cannot be managed by this procedure. Success of 90 per cent or higher has been reported, as well as a mortality rate of only about 3 per cent. So we definitely have new hope to offer our patients.

. . . one can foresee the eventual use of nylon in the arteries from the coronary down to the popliteal

DR. BAKER: We have now utilized the graft in about 40 cases in 6 months; so I am quite sure that at the rate at which the profession has accepted vascular surgery we are going to have twice that number within the next 6 months. With our plans for accurate recording of statistics and accurate predeterminations of the conditions with which we are dealing, combined with our knowledge of those lesions which we consider to be nonsurgical and the work we hope to accomplish in our cooperation with our medical colleagues in the ratio of atherogenic statistics, all tied in with what we can visually demonstrate with the arteriogram, we hope in a short time to make a reasonably good contribution for the osteopathic profession. Now I should like to ask Dr. Turner to discuss the role of vasodilators, and then Dr. Barrows will discuss the role of sympathectomy.

DR. TURNER: Peripheral dilating agents have only one use and that is to ablate the normal tone of the blood vessel. If there is impending gangrene or marked trophic changes of the skin, vasodilators will bring an increased blood supply to that area, evidenced by increased warmth. In my experience, individuals with intermittent claudication do not profit from either sympathectomy or vasodilating agents. Some dilating agents may be used for peripheral endarteritis but not for major vessel block. In the aged arteriosclerotic who is a poor surgical risk we give intra-arterial histamine, a 1 mg. base of histamine in 100 cc. of normal saline, with moderately good effect. This is used only if the femoral artery can be palpated and entered.

DR. BARROWS: As far as sympathectomy is concerned, its primary therapeutic value is in releasing tension in the capillary bed to allow arterial vasodilatation and increased circulation in the small vessels. It certainly has no effect upon obstructed larger vessels, but since this obstructive process comes on gradually, sympathectomy may allow Nature to enlarge the circulation and circumvent the obstructed area; that is what keeps the extremity alive. We have found that by performing sympathectomy before any arterial procedure, we create a firm, comfortable extremity as far as it is possible and we get all the additional blood supply to the extremity that we can on a 24-hour basis.

As for actual therapy in the generalized endarteritic type, particularly in older people in whom the obstruction is such that there is no open vessel to which a graft can be brought, we perform a sympathectomy to provide additional circulation. In many cases we have seen black toes clear up and people retain extremities that otherwise would have been amputated; so we feel that sympathectomy is often a salvage procedure. The best we can hope for is to provide comfortable extremities and to keep these patients from having to have amputation. Or it is an excellent preliminary stage in amputation and allows its safe performance at a lower level.

DR. BAKER: In summarizing this hypothetical case, we would say that treatment is a bit difficult at the stage in which the patient has presented himself, but it should be surgical resection of the involved segment, or opening of the involved segment and thromboendarterectomy, or replacement by a suitable homograft or nylon prosthesis. When this is done this man will be restored to full activity.

We have also discussed the hazards of arteriography. I concur with Dr. Small in this. I still feel that the patient with any occlusive arterial process deserves sympathectomy prior to or concomitant with the arterial restorative procedure, if possible. The individual gets more effect from a sympathectomy than is apparent on the surface. Sympathectomy gives a permanent peripheral dilatation of the end-arteries, particularly those right under the skin. This permanent vasodilatation is the first line of defense against gangrene. The grandpa who suffers his claudication for a long, long time and then accidentally kicks his toe, skins his shin, or bumps his ankle and breaks down the skin barrier, is in trouble. If he had had a sympathectomy, his chances of developing gangrene would be very remote; but without sympathectomy, his chances for developing gangrene are exceedingly good. So I think of this procedure as good insurance. Lumbar sympathectomy by the extraperitoneal approach is a safe procedure. It certainly is far less dangerous than a routine appendectomy, even in the elderly patient, because it can be done very rapidly and without entering the abdominal cavity. When both sides are involved, both sides can be treated simultaneously by a surgical team, still without entering the abdominal cavity.

We will now attempt to answer the questions which have been presented to us.

Question 1. There have been reports of good results from employing large doses of heparin rather than steroids, at far less cost and with much less likelihood of undesirable side effects. Do you feel this is correct, or do you feel that the dose of steroids was not adequate?

DR. TURNER: I agree largely with this stated principle. However, in the treatment of the acute stage of rheumatic fever, a majority of physicians favor the opinion that steroid therapy is much superior; in fact most of the men at this time do not use salicylates at all in most of their cases. They usually start with 75 mg. of a steroid preparation, using 25 mg. three times a day and maintaining that for 4, 6, or 8 weeks, or until all evidence of activity has subsided (as shown by the sedimentation rate), when the dosage can be reduced by one-half tablet a day.

Question 2. Will you discuss the value of a Martini as a vasodilator and cigarettes as a vasoconstrictor?

DR. BAKER: The problem of the use of alcohol as a vasodilator can reasonably well be summed up in the statement that I have heard and have repeated many times: There is no question but that it is a good vasodilator, provided the individual can maintain sufficient cerebration to take enough of it to maintain vasodilation. It does have a therapeutic use in certain acute processes, such as acute embolic occlusions, since it is so rapid in its effect. Alcohol can be used intravenously or in the form of a Martini, if it is used as liquor was supposed to be used, in conjunction with meals. Then I am sure it has a valuable therapeutic effect.

So far as smoking is concerned, certainly no panel discussion on our subject would be complete without something being said about smoking. I was a heavy smoker myself until 6 years ago. I stopped because I got tired of cutting legs off heavy smokers. I know there is nothing more pious than a reformed smoker and so I will just say I hope your next smoke will taste awful. I do not believe there is anything available medically in the over-all picture that will counteract the bad vasoconstrictive effect of the continued use of tobacco in the presence of any type of vascular lesion, whether it is a coronary attack or amputation due to peripheral arteriosclerosis. Regardless of whether or not it produces carcinoma, I am positive on the basis of statistical evidence from my own practice, which is limited to these problems, that it has a bad vasoconstrictive effect. Thousands of patients improve when they stop smoking, and thousands do not improve because they will not stop smoking. I went through my records and those of other hospitals and had to review 200 major amputations before I came upon one case in a nonsmoker, and this was excluding only severe diabetic states from the reports studied. Those persons who lose their legs due primarily to atherosclerotic lesions are the smokers, and those who do not lose their legs are the nonsmokers. Happy smoking, ladies and gentlemen!

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On Death

► THERE CAN BE NO RIGID SET OF RULES for determining the action of physicians which would be appropriate in every dying patient. For those with deep religious convictions, death hardly constitutes a problem. Likewise those with a strong character and a firm conviction that death is the final and inevitable part of life, the great pattern of nature which permits youth to be renewed perennially with the reiterated hope that each new generation may improve upon its predecessors. It might be generalized that death is more readily accepted by older people than by the young, although obviously there are exceptions. How then does a good physician help a patient to face death and, accepting the ways of nature, to meet it? It is not done by all the busy paraphernalia of scientific medicine, keeping a vague shadow of life flickering when all hope is gone. If adjustment may be looked upon as the *summum bonum* of contemporary psychiatry, its failure is exhibited when this pattern of complete egocentricity breaks down utterly in the face of death.

I cannot conceive of the practice of medicine in which there is any breach of absolute trust and confidence between patient and doctor. A good physician cannot lie to his patient. If the truth be bitter, he must help the patient face it. On the other hand, I could not bear to practice medicine if I felt obliged always to tell everything I know or think I know. Our fallability condones only legitimate reticence. Thus, in the last analysis, each person must be judged and dealt with as an individual person. This maxim should be followed in life as well as in death. In a materialistic age, in a society which is certainly not notable for individual bravery, independence of thought, or a philosophic attitude, it will not be possible to make a philosopher out of every man during a terminal illness. Perhaps Sir William Jenners' three essential qualities for the medical man will see us through such difficult times: "He must be honest, he must be dogmatic, and he must be kind."

With the public's naive acceptance of scientific medicine as magic, as being able to do all things for all men, the notion of failure is repugnant, even though this failure is built into the nature of things. Like the law of gravity, it may be defied, but always with failure. I have often considered the remarkable one-sidedness of medical education from the point of view of the doctor-patient relationship. Think of all the years that go into our efforts at making doctors and when we have become doctors all the efforts that must go into our continual study in order not only that we keep up but that we improve. Consider the opposite partner in the social transaction of medical practice. The patient not only is never educated in being a patient, but even those with the best general education, the most alert, are likely to have a fabric of misconceptions woven into their ideas of medicine. These become a torment when a person has to wear the hair shirt of misunderstood disease embodied in his illness. Without being melodramatic or flippant, I should like to see somewhere in the educational pattern of our time a plan to educate and train people how to be patients, what may be the significance of illness for him, how to meet it, and whenever he can, defeat it, but to accept reality.—William B. Bean, M.D., *A.M.A. Archives of Internal Medicine*, February 1958.

PLASTICS
in cosmetic surgery

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THE PLASTIC SURGEON is concerned with the repair of defects and malformations, no matter how caused—whether by the weapons of war, the grim machines of an industrial age, the ravages of disease, or the tragic failure of nature. Because of this concern over form as well as function, the plastic surgeon is occupied in a never-ending search for a suitable material to use in restoring or creating normal body contours. The ideal material should be readily obtainable, malleable to any shape, and capable of becoming a permanent part of, and relatively harmless to, the host tissues.

It would seem that human tissues would fit all of the ideal requirements. Gillies and Millard[1] drew attention to and revived interest in this subject during World War I, when thousands of war victims desperately needed reconstruction. Unfortunately, human tissue does not necessarily tolerate transplantation. Fat, for example, which would seem to be ideal to build up soft-tissue contour, is notorious for its fragility and tendency to be absorbed when transplanted. The fat graft that will survive is rare indeed. Cadaveric cartilage, our tissue of choice for certain procedures, is very difficult to obtain, is difficult and sometimes impossible to carve, and will frequently warp out of shape or even absorb after implantation. Bone can be used where a rigid support is needed, but the major operation required to obtain it, the pain of the procedure, and its cost may far outweigh its advantages.

In the search for a more ideal material, we began with some trepidation to use plastics, several years ago. But with the passing of time and as the result of experience, the timidity has been replaced with enthusiasm. This is not to say that these materials do not have their shortcomings, nor that they can be used without regard for basic surgical principles. However, their usefulness far exceeds any human material used to date.

Justifiable concern for the possible carcinogenic effects of foreign body implants, whether autogenous, homogenous, or synthetic, has been caused by the reports of the Oppenheimers and Stout[2] on production of sarcomas in certain rodents by various plastic implants. It would be foolhardy to ignore the significance of this work, but it would be just as foolhardy to fail to consider the total picture in its true perspective. The laboratory animals used are extremely sensitive to the production of sarcoma and indeed develop a fair number of sarcomas spontaneously. In addition, the same experiment performed in other laboratories produced conflicting results. Moore and Brown[3] have reported no tumor formation in fifty mice over a 10-month period. They also state that "It is unfortunate that the incidence of natural tumor and the variation there may be in susceptibility to tumor producing agents is unknown in the various rodents used. It is possible that the lives of many of these mice and rats terminate with tumors in the natural course of events; it is also possible that tumor may be readily produced in them."

Of greater significance is the fact that no tumors have been developed in any of the higher animals, nor have any cases of tumor formation in humans been reported. Grindlay and Waugh[4] in over 2 years' experience with dogs found no evidence of tumor formation.

More impressive and perhaps even more important

Fig. 1. Shrapnel wound of nose with destruction of septal cartilage, deformity of nasal bones, and marked cicatrix formation of skin.

Fig. 2. Deformity repaired with L-shaped polyethylene prosthesis, through intercolumellar incision.

Fig. 3. Typical saddle nose deformity subsequent to submucous resection; front view.

Fig. 5. Front view of repaired saddle nose deformity, with polyethylene prosthesis.

Fig. 4. Profile view of saddle nose deformity.

Fig. 6. Profile view of repaired saddle nose deformity.

is the actual clinical experience with human subjects. Rubin and Walden[5] report a series of 135 cases, covering a period of 7 years. Pangman and Wallace[6,7] report a series of over 400 cases of Ivalon implantation with no evidence of tumor formation.

Two unrelated plastics will be discussed: polyethylene, a dense solid, and Ivalon, a spongy material.

Polyethylene

Polyethylene is a nonconductor of heat, cold, and electricity and is insoluble in tissue fluids. It has considerable flexibility in thin layers and great tensile strength. These physical properties together with the proved paucity of tissue reactions make it an admirable substance for the replacement of rigid tissue support such as cartilage or bone in selected cases. It is shaped and carved with remarkable ease and feels somewhat like soap or a soft wood.

Polyethylene is available in almost any plastic supply store. For surgical purposes it is necessary to procure the pure polyethylene without additive. It is available in sheets of varying thicknesses; ¼-, ½- and 1-inch sheets will fit most surgical needs.

Polyethylene can be carved with a knife and sawed, and the thin sheets can be cut with scissors. The Casco type of hobby tool provides a number of burrs which do a good job of producing even complex shapes. Tiny holes are drilled through the finished implant to encourage fibrous penetration. When the desired shape is obtained, the prosthesis can be sterilized and stored indefinitely.

The method of sterilization is simple. The specimen is placed in a 40 per cent formaldehyde solution for 24 hours. It is then placed in a solution of 1:1000 aqueous Merthiolate, both to maintain sterility and to dispose of the formaldehyde fumes, which are very irritating to living tissue. To be certain that there is no more formaldehyde in the specimen, it is transferred to a fresh Merthiolate solution that can be used for storage. The Merthiolate is changed every 30 days, should the polyethylene be unused.

Polyethylene is valuable for rigid support in such instances as the L-shaped implant used to correct saddle nose.

Advantages.—

1. It can be carved to reproduce accurately the structure of various parts of the human body, such as the nose, with much finer detail than can be achieved with cadaveric cartilage.
2. Its use shortens operating time, as it may be carved and sterilized prior to surgery.
3. It eliminates the possibility of warping, breaking, or dissolving—hazards frequently encountered with the use of cadaveric cartilage.
4. Defects of unlimited size or shape can be corrected, in marked contrast to the limitations of bone or cartilage.

Disadvantages.—

1. It is not a normal body tissue. (Neither are suture materials or any of the many substances commonly used in surgery.)
2. It might be carcinogenic. (This has not been demonstrated in the human being and up to the present writing seems a remote possibility.)
3. It has not stood the test of time. (Every new idea faces this criticism.)

Clinical Applications.—

Case 1. The patient (Fig. 1) had been injured with shrapnel in the 1941 Pearl Harbor attack. The septum had been completely destroyed and the nasal bones crushed, so that the nose presented a flat, wide appearance. In addition, the skin was badly scarred and devitalized.

Restoration in this case would require an L-shaped implant to support the dorsum of the nose as well as the tip. Use of cadaveric cartilage was considered but almost immediately discarded because the skin was in such poor condition that it would not tolerate a bulky cartilage implant, even if a suitable piece of cartilage could be found. Polyethylene was decided upon as the material of choice because it could be carved to almost tissue paper proportions and still retain some degree of strength.

The implant was inserted through an intercolumellar incision over the dorsum of the nose, with the shorter leg of the L resting on the nasal spine of the maxilla. The wound was closed in layers with 5-0 mild chromic gut for the subcutaneous tissues and 5-0 silk for the skin.

The case has been followed for a year. There have been no complications (Fig. 2).

Case 2. The patient had had a submucous resection some years earlier, resulting in saddle nose (Figs. 3 and 4). A dorsal strut cadaveric cartilage implant was inserted. An L-shaped implant would have been preferred, but a large enough piece of cartilage could not be found. Unfortunately, the cartilage began to warp within a few weeks, producing a marked deformity to which the patient understandably objected.

The cartilage was removed, and an L-shaped polyethylene implant was inserted in its place. The same technic was used as in Case 1.

A minor complication developed when some of the deeply placed gut sloughed out. No apparent damage was suffered by the implant. A major complication almost developed when, during the course of strenuous dental manipulation, the implant was pushed out of position. The prosthesis was replaced by very simple external manipulation without adverse sequelae. It was felt that if the polyethylene survived this manipulation, it could survive almost any injury short of a direct, heavy blow. The prosthesis has been in place for 8 months without further complication (Figs. 5 and 6).

Fig. 7. Receding chin prior to surgical correction.

Fig. 8. Receding chin repaired with Ivalon chin implant. Rhinoplasty was also performed.

Ivalon

Ivalon (polyvinyl chloride) is a white spongy material available in "brick" form which may be cut to any desired shape or form. It was originally investigated by Grindlay and Waugh[4] for plombage in thoracic surgery.

It is a substance that is easily infected and must be used with careful aseptic technic. The early failures with this material were probably due to faulty sterilizing technic. Pangman and Wallace[6,7] report a large

Fig. 9. Micromastia prior to insertion of Ivalon prosthesis.

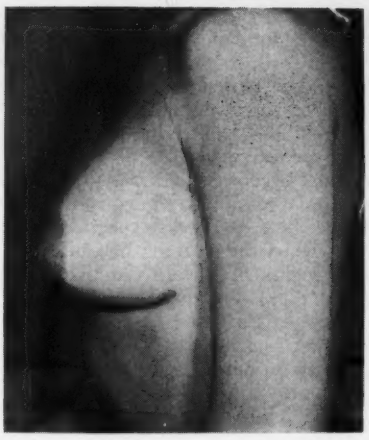


Fig. 10. Result of plastic repair. Ivalon prosthesis was inserted behind the breast capsule.

Fig. 11. Preoperative photograph showing giant fibroadenoma of the right breast. Corrective operation is done in two stages.

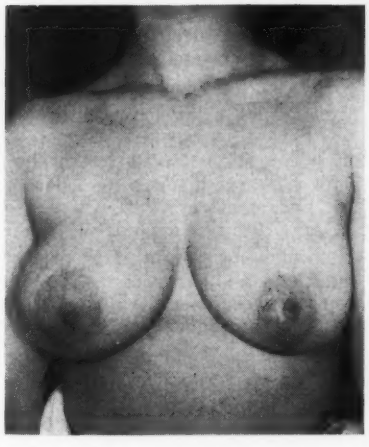
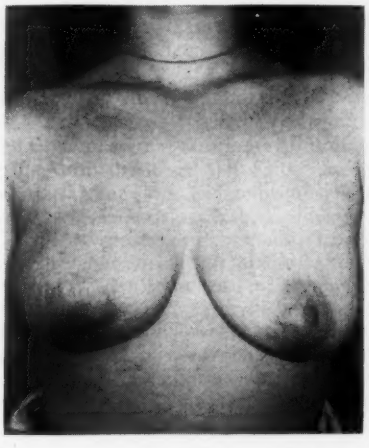


Fig. 12. Postoperative photograph. Subcutaneous mastectomy was performed, followed by implantation of Ivalon prosthesis.



series of cases with a negligible number of minor complications. They sterilize the Ivalon according to the method of Salle, who employs a new sterilizer using a vacuum, followed by formaldehyde gas for several hours, then vacuum again.[7] For the smaller implants, a soak in formaldehyde for 24 hours, followed by immersion in aqueous Merthiolate to remove the formaldehyde fumes, a procedure described in connection with polyethylene, has been adequate.

Ivalon requires meticulous sterilization and careful surgical technic, but is an excellent material for areas that require a nonrigid implant, such as the breast, the receding chin, and the facial contour that requires a general building up.

Advantages.—

1. It is readily available and inexpensive.
2. It can be easily shaped with scissors.
3. It becomes fixed to the tissues by fibrous penetration.
4. Delicate shapes can be produced to conform to almost any soft-tissue contour.
5. It does not deteriorate, nor do its physical properties change. (On occasion a slight shrinkage is noted.)
6. Extensive investigation does not indicate any carcinogenic effect on human beings.

Disadvantages.—

1. It will act as a culture medium in the presence of hematoma. (The manufacturer states that it will not support bacterial growth.)
2. Should it become infected shortly after insertion, it must be removed. There are no cases on record that indicate infection subsequent to implantation.
3. The major objection, particularly to its use as a breast prosthesis, is the relative firmness of the material. However, it should be pointed out that many women consider this an advantage.
4. In general, the objections to Ivalon are the same as those to polyethylene.

Clinical Applications.—

Chin Implant. Ivalon appears to be a superior material for correction of the receding chin (Figs. 7 and 8) and surpasses cartilage or bone in ease of handling, availability, minimal edema, no absorption hazard, no distortion, and superior cosmetic results.

An incision is made in a normal crease under the chin, and by sharp dissection a pocket is created over the anterior aspect of the mandible. This space is directly over the periosteum and is slightly larger than the implant. Hemostasis should be meticulous.

The Ivalon is trimmed to a size sufficiently large

to correct the chin defect and is inserted in the space. Care is taken to prevent redundancy of the sponge and to taper the edges to conform to the normal curvature of the chin. The wound is closed in anatomic layers without drains. It has been found unnecessary to suture the sponge in place. Immobilization is obtained by the external application of adhesive tape.

Facial Depressions. Zygomatic depression fractures are a source of consternation to the cosmetic surgeon. Usually they are not discovered until several weeks after the injury, when the swelling has subsided. By this time, the fragments are healed in place and cannot be reduced, and there is marked deformity.

The typical case presents a flattened area over the malar depression that disturbs the balance of the face. Sometimes the deformity is out of proportion to the depression and requires only a thin piece of Ivalon for correction.

Several precautions are necessary for a successful result.

1. The traumatized area must be well healed and without infection.

2. The incision must be at least 1 cm. from the traumatized area for adequate soft tissue coverage of the implant.

3. Absolute hemostasis is necessary.

4. Careful anatomic closure must be made, layer by layer.

Breast Prosthesis. Since the day that man first became aware of woman, the female breast has been important in the evaluation of feminine pulchritude. The woman who has been denied her rightful curves by either disease or the unpredictable caprice of nature feels her lack very keenly, and she also feels that she has the right to surgical assistance in making up for it.

The emotional impact of the mutilating mastectomy is well known; surely it is just as much the surgeon's responsibility to restore the form of the breast as it is to destroy the diseased tissue, provided it can be done without endangering the patient's health.

The breast prosthesis may be indicated in the following:

1. Micromastia.

2. Restoration of breast contour following simple mastectomy. The prosthesis is best inserted at the time of mastectomy to take best advantage of the skin flaps.

3. Following radical mastectomy, when there is reasonable assurance that a malignant lesion is not present or likely to occur. We all recognize that constant irritation may be a factor in the production of malignant growths, but it is questionable if the inert Ivalon would cause any more irritation than the suture material that is used. Needless to say, the patient should be made aware of the controversy and be willing to take the risk.

Surgical technics.—

1. Micromastia (Figs. 9 and 10). Incision is made in the submammary fold down to the pectoral fascia. By sharp dissection, a space is created behind the breast, between its capsule and the pectoral fascia and superficial to the latter. Care is taken to avoid tearing the fascia, as this causes unnecessary bleeding and postoperative pain. The space is made somewhat larger than the proposed prosthesis in order to accommodate it comfortably and without undue tension. Hemostasis needs to be carefully accomplished, because the sponge will soak up the blood, increasing the danger of infection.

When the prosthesis has been placed, the wound is closed by approximation of anatomic layers, with emphasis on secure closing of the fascial layer for support. Drains are not used, as they may contribute to secondary infection.

The postoperative course is usually without incident. There is some degree of soreness for about a week. Rarely, fluid will accumulate and will need to be aspirated. This is accomplished by inserting an 18-gauge needle through the wound and aspirating with a syringe. The usual aseptic precautions are to be taken.

2. Subcutaneous Mastectomy with Insertion of Ivalon Implant (Figs. 11 and 12). This procedure is used when it is necessary to remove some or all of the breast tissue and it is planned to replace the breast tissue with an Ivalon prosthesis. This procedure may also be used following a radical mastectomy, provided the skin flaps can be preserved.

The initial incision is essentially the same as for the preceding operation, and a space is created behind the breast, between the pectoral fascia and the breast capsule. The diseased breast tissue is then carefully dissected away from the skin flap. It is important to leave as thick a fat flap on the skin as possible to preserve the circulation. (It is interesting to note that in this procedure all of the glandular tissue is removed and all of the deep circulation to the breast is interrupted; yet no one has ever reported a sloughed nipple or skin flap. It makes one wonder whether our concepts of breast circulation should not be re-evaluated.)

Because hemostasis is so important with the use of Ivalon, I prefer to delay the insertion of the implant for several days in order to control the oozing that occurs after a destructive procedure and to have the opportunity to remove the inevitable débris.

Following the insertion of the implant, the closure and the postoperative care are the same as for the previous operation. However, because there is less breast tissue covering the Ivalon sponge, the patient must be cautioned to expect the breast to be quite firm.

Summary

The advantages of the plastics, polyethylene and Ivalon, to replace human tissue for rigid support and for creating soft-tissue contour in cosmetic surgery have been discussed.

The carcinogenic possibilities, pro and con, have been presented.

Clinical cases as well as a brief outline of the technics involved have been included to indicate the uses of these plastics.

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INTRACTABLE PLANTAR KERATOSIS*

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THE PROBLEM of new growths subjacent to metatarsal heads is much in need of study for clarification of the pathologic processes involved and for detailed understanding of the normal and pathologic anatomy. The subject is discussed in the orthopedic literature by Dickson,[1] DuVries,[2] and Giannestras.[3] It is important mainly because people suffering from these intractable skin lesions have extreme pain and serious disability. Dickson[1] estimates that 10 per cent of cases of verruca plantaris do not respond to conservative therapy.

The onset is insidious, and early stages are found almost universally in modern women. All patients with these intractable lesions exhibit mechanical defects in the feet, with weight thrown abnormally on one of the metatarsal heads, producing a painful pressure point. Sharp plantar protrusion of the involved metatarsal head causes remarkable thinning of the plantar fat pad. The proximal phalanx articulates at the metatarsal base, with the dorsal surface of the heads in more or less fixed dorsiflexion. The plantar capsular ligament is a very thick, dense, fibrocartilaginous plate that moves with the phalanx during flexion and extension. It forms the powerful functional part of the socket for the head of the metatarsal bone.[4] The articular surface of the metatarsal head is prolonged for a considerable distance on the plantar surface of the metatarsal head. The result of this arrangement is that when the joints are extended a considerable part of the articular surface rests on the plantar accessory plate of the joint capsule. Normally this fibrocartilaginous plate is firmly attached to the plantar base of the proximal phalanx. Proximally it is loosely attached to the subcapital area of the metatarsal. Upon plantar flexion a wrinkle is seen in the noncartilaginous portion of the plantar plate. When the toe is dorsiflexed this wrinkle disappears. The nutrient arteries gain access to the subcapital area of the metatarsal under the protection of the fibrous plate or accessory ligament.[4]

In claw toe the metatarsal head rests on the accessory ligament constantly, with the plate fixed in extension. Fixation as described accentuates further the effect of minimal trauma to the common digital artery from pressure transmitted through the sole. The relative fixation of the toes in dorsiflexion provokes depression of the metatarsal heads. The resulting depression of metatarsal heads becomes a major factor favoring atrophy of the plantar fat pad. The skin is most susceptible to permanent attritive changes inflicted by the body weight squeezing the plantar joint capsule plate into the skin and subcutaneous tissues, producing hypoxia of the skin. The organic changes in the subjacent skin are minimal. The functional changes are extreme and much out of proportion to the small circumscribed area of hypoxic, keratin-infiltrated tissues. The middle three metatarsals are stiff as compared to the peripheral ones and they approximate each other more intimately.

In the human body the joint that has to sustain the greatest pressure is probably that between the first metatarsal and its sesamoid bones. It can be shown that as the heel is rising from the ground the pressure at this joint may rise to 40 kg. per square centimeter. It is probably significant that the upper aspect of these sesamoids nearly always shows attrition in the elderly cadaver.

The conventional comparison of articular cartilage with skin, so far as attrition and regeneration are concerned, is undoubtedly misleading. In one series[5] the skin and subcutaneous tissues were worn out and the articular cartilage showed little or no change. This was true for metatarsal heads two, three, and four, but not for one and five.

The plantar condyles in the middle three metatarsals are usually sharper than are one and five. The plantar plate is more loosely attached to the necks of the middle three metatarsals than to the peripheral ones. The skin subjacent to the middle three is thick and tough. This skin has very little mobility and flexibility and is fixed to deep structures by the plantar fascia which sends fibers and septa to the skin and also deeply to the ligamentous tissues at the sides of the metatarsals. The subcutaneous fat is in firm adherent lobules each contained in a pocket of connective tissue. Cic-

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atrices here contain a rich nervous organization which for the most part is bare to sheath and vulnerable to normal or abnormal stimuli. In these traumatic lesions, stretching and squeezing are the factors that probably stimulate the nerve endings. In all of these there is a reflex vasospasm. Prolonged stimulation to this skin gives rise to pain that is frequently described as burning.

Metatarsus primus varus and splaying are probable compensatory mechanisms for increasing the weight-bearing area of the ball of the foot and are commonly seen in patients past middle age and in those who are obese.

Surgical treatment

Surgical correction of ulcer of attrition or intractable keratosis is accomplished by excision of offending condyles. Of necessity any attack on these structures tends to result in an embarrassing cock-up toe. It matters very little whether the shortening operation of Giannestras[3] or the plantar condylectomy of DuVries[2] is performed; some degree of cock-up will usually occur, although many years may supervene before the unsightly complication is full blown. Degenerative changes continue to take place in such feet. The extensor mechanism has the uncanny ability to contract, shorten, and effectively dorsiflex a toe many years following the various methods of surgical interference. With this in mind I have utilized a pancondylar operation, the aim being to remove trauma-producing condyles that project plantarly and retain a moderately freely movable pseudarthrosis. If excess motion is permitted, the digit wanders or is pushed dorsally and out of the way by more functional adjacent segments. Osteotomy is performed on the metatarsal neck with a Stryker oscillating saw. A sharp thin osteotome is used to dissect the metatarsal head, leaving the collateral ligaments intact and embracing a thin layer of cortical bone. This is especially easily accomplished in dissecting the proximal phalangeal condyles, as they are very firmly fixed to the collateral ligaments. The condylar excision should change the hard plantar protrusion to a soft plantar pad indentation into which is fitted a rondic tonsil sponge. A similar sponge is placed over the defect in the dorsal aspect of the bone. The involved segment of the toe is overlaid with rolled gauze to hold the part in moderate plantar flexion, and a Shantz compression bandage is applied.

The objective is a fibrous joint which permits a minimum wandering of the toe segment, yet affords a sufficient degree of freedom from attritive plantar pressure against the involved skin. Condyles producing ischemia are excised. Cartilage and bone of low metabolic activity are excised from their position adjacent to the hypoxic skin and subcutaneous tissue.

The long and short extensor tendons are cut in all cases in an effort to prevent cock-up deformity. Excision of proximal interdigital skin for web toe production has been carried out in several cases for cock-up prevention.

Ten cases involving intractable keratotic lesions subjacent to metatarsal heads have been studied. Excision of the metatarsal head has been uniformly successful in the cure of these lesions. Cock-up toe upon resumption of weight bearing has resulted to some degree in all cases.

4150 N. 19th Ave.

All patients with these intractable lesions exhibit mechanical defects in the feet, with weight thrown abnormally on one of the metatarsal heads, producing a painful pressure point

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Discussion

HAROLD E. CLYBOURNE, D.O., F.A.C.O.S., Columbus, Ohio: I have reviewed Dr. Schwartz's article with great interest. I want to compliment him for bringing to our attention a condition that has been passed over by all of us either as seeming too trivial or because we have not known what to do to obtain the desired results.

Although intractable plantar keratosis is not dangerous, it can become disabling. It is a very painful and irritating condition that becomes more pronounced if there is a lack of proper care.

Dudley J. Morton and R. Plato Schwartz have contributed more to medical literature on the human foot than any other authors. Morton's book, "The Human Foot,"[1] is one every orthopedist should have in his library. Although it was first published in 1935, later studies have not changed any of the concepts stated by Dr. Morton. In the chapter "The Foot In Stance," he describes tests using the staticometer to measure the weight distribution on the feet. In the normal foot he found that the weight registered by the heel equaled the combined weight registered by the components of the forepart of the foot. He found that the head of each metatarsal bone had contact with the plates and that all shared equally in the support of body weight with the exception of the first metatarsal bone which bore a double share. This distribution gave six points of equal weight bearing to the forepart of the foot to equal the weight borne by the calcaneus. This definitely ruled out the old conception of a metatarsal arch composed of the metatarsal heads.

R. Plato Schwartz, in his experimental work at the University of Rochester, supported Morton in these concepts.

With this measurement of weight distribution as a basis for his theory, Morton divided the foot into five individual arcs

conforming to each of the metatarsal bones. When viewed laterally each arc differs in height and length; the second arc is the highest and the fifth is the lowest. When these five arcs are combined at the heel and subjected to body weight on a level surface, the plantar ligaments of each arc simultaneously become taut. If for some reason like shortness of the ligaments or some abnormality in the bone structure the head of one of the metatarsal bones is held below the planes of the others, it will obviously receive the major share of the body weight with resultant irritation to the tissues beneath it.

Occasionally developmental defects of one or more of the bones of the foot may occur which will interfere with normal foot function. Morton pointed out two of these:

Shortness of the first metatarsal bone is a condition found in many unbalanced feet. In my own practice I have found that 15 per cent of those examined have this condition. When the first metatarsal bone is short, it fails to contact the shoe sole properly and sustain its share of weight. This results in a concentration of weight stresses on the second metatarsal bone and in time causes hypertrophy of the entire bone. The foot rolls inward so that the head of the first metatarsal bone can contact the sole of the shoe, thereby causing or increasing pronation of the foot. This in turn causes abnormal weight distribution through the foot with resultant strain.

The second factor Morton pointed out was the dorsal hypermobility of the first metatarsal segment. This is due to an unusual degree of mobility in the joints between the scaphoid and the inner and middle cuneiform bones. This again causes pronation and can be shown roentgenographically.

With these facts in mind I would like to discuss briefly the operative technic. Since there are six weight-bearing points in the metatarsal area, removal of more than one of these points would be disastrous to weight distribution and foot function. One metatarsal head of the middle three can be successfully removed without too much stress, but if two are removed the entire center of the metatarsal area will collapse. I have inherited one of these cases, and the only relief I have been able to give is by the use of specially built supports.

A second method to be used if more than one metatarsal head is involved is that described by Giannestras,[2] consisting of a step osteotomy of the proximal end of the metatarsal shaft, shortening it ½ inch. This preserves the metatarsophalangeal joint. However, in either of these operations, extensor tenotomies should always be performed and, if indicated, a dorsal capsulotomy in the step osteotomy.

I suggest that before operation is contemplated a rubber and leather arch support be made from a plaster mold of the foot, with an extension under the first metatarsal head to compensate for the short first metatarsal bone. This in combination with a well placed metatarsal pad often gives these patients the relief they have been seeking.

111 W. Third Ave.

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Discussion

JOHN D. SEGEL, D.O., Los Angeles, California: Metatarsal head resection is indicated in cases of intractable plantar keratosis that have not responded to conservative therapy. A cock-up deformity will inevitably occur because of the presence of the flail joint, but it is a small price to pay for abolishment of the severe distress that these lesions produce. I have found that the metatarsal shortening procedure proposed by Giannestras[1] has not resulted in any excessive cock-up deformity such as occurs with resection of the metatarsal head. However, more detailed bone carpentry is required for this procedure, and if sufficient metatarsal shortening is not obtained the procedure is of little benefit.

The therapy of plantar keratosis does not end with resection of the metatarsal head, for it is not uncommon for the patient to later develop a second similar lesion over a previously asymptomatic metatarsophalangeal articulation (usually the third or fourth, following removal of the second metatarsal head.) The original plantar keratosis develops from a functional error elsewhere in the foot, which interferes with proper weight distribution under the metatarsal heads. Thus, postoperatively, I routinely place the patient in metatarsal bars, wedge his heel if it is not in correct alignment, and prescribe foot exercises and gait training.

Dr. Schwartz briefly refers to the plantar condylectomy of DuVries,[2] which I also briefly mention—to condemn. As a result of condylectomy, the nutrient arteries, which enter the subcapital area of the metatarsal, are often injured, thus resulting in an aseptic necrosis of the second metatarsal head, a condition identical to Freiberg's disease in the adolescent. I have had cases showing these changes following a condylectomy of the second metatarsal head; the operation had little effect on the plantar keratosis, and eventually metatarsal head resection was necessary for subsidence of the symptoms.

I also wish to present one other case of metatarsal head resection which resulted in a bizarre complication. The diagnosis of the complication is still undetermined. The patient, a 40-year-old man, was first seen on October 14, 1955, with long-standing keratoses of both feet. The right had drained intermittently for 2 or 3 months prior to the first visit to my office. Other than an associated mild bilateral pes cavus, all findings, including neurologic examination, were essentially negative. Conservative therapy greatly benefited the left foot, and the symptoms gradually subsided. Under conservative care the right foot ceased drainage but remained quite painful on weight bearing. Thus on April 2, 1956, the second and third metatarsal heads were removed via a dorsal approach.

The postoperative phase was uneventful, with the wound healing per primam and full weight bearing approximately 1 to 2 weeks postoperatively. About 8 weeks postoperatively, the patient was seen on a routine office visit, at which time there was mild nonpitting edema over the dorsum of the foot and extending to the midcalf of the right lower extremity. All signs for vascular complications were negative, and at that time the condition was looked upon as a disuse edema. In order to effect symptomatic relief, the patient was placed in an Ace bandage and instructed regarding frequent elevation of the involved foot. Following approximately 3 weeks of this therapy, the patient again returned to my office. At this time the patient had a massive edema extending from the proximal calf down to and including the foot and ankle. The wound was dry and presented no evidence of localized tenderness. There was likewise no tenderness on palpation of the forefoot or ankle. Homans' and Moses' signs were negative. The patient was able to bear full weight on the foot, with no distress. At this time the extremity was placed in an unna boot. On removal of the boot approximately 2 weeks later the edema had greatly subsided. There was now a marked visible deformity of the tarsal region. Deformity was readily palpable; this area was nontender and on mild motion crepitation was produced.

I subsequently rehospitalized this patient. At this time, in addition to numerous blood chemistry examinations, a spinal tap and biopsy of the tarsal area were performed. All laboratory findings, including fasting blood sugar, alkaline phosphatase, total protein, and albumin-globulin ratio, were well within normal limits. The spinal tap revealed a total protein of 42 mg. per 100 cc.; the colloidal gold test, and the spinal Kolmer and Wasserman tests were negative. The biopsy specimen was interpreted by the pathologist as showing chronic inflammatory reaction, with degenerative changes in the bone and cartilage. The patient's extremity was placed in a high top shoe, following the biopsy, which lesion healed uneventfully. At the present time, he continues to bear full weight and has relatively little if any distress in the foot, other than periodic swelling if he is on his feet for any prolonged length of time. I am unable to explain the complication which occurred postoperatively in this patient, but feel it to be of neurotrophic origin.

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PHYSIOLOGIC surgery:

A medical technic for treating fistulas of the duodenum*

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THERE ARE TIMES when busy surgeons, internists, and general practitioners should pause to philosophize and review their knowledge of the basic sciences. If this were done more often, it perhaps would not be so often said that treatment is obvious. To establish such technics of treatment in the first place, some individual must see beneath the mass of scientific data this obvious approach to a specific disease.

Many such examples can be cited, such as the evolution of modern use of antibiotics. Now a matter of history, in 1928 Fleming first observed that a contaminating mold on culture plates caused bacteria to undergo lysis. Because of the fact that the mold belonged to the genus Penicillium, he used the word penicillin in referring to the culture broth filtrate and its antibacterial substance. Such an "obviously" important discovery remained dormant for approximately a decade, and it was not until the brilliant work of Florey and his investigators, begun in 1939, that our modern antibiotic concept was evolved and developed. Since then, the "obvious" having been established, many new agents have been developed within this category.

We who follow in the steps of our great teacher, Andrew Taylor Still, find the technics in the osteopathic treatment of disease an "obvious" approach; but it required the insight of an individual to establish the relationship of structural abnormalities to physiologic variants, both somatic and visceral.

Rationale for new treatment

This paper is not intended to philosophize or recount medical history, but to present a technic for treating fistulous tracts developing after surgical operation in the upper right quadrant. Such tracts frequently have their origin in the duodenum. This complication of upper right quadrant operation results in the drainage through this fistula of intestinal contents containing large amouts of lipase and trypsin; the presence of the latter is particularly serious insofar as the patient's recovery is concerned.

Trypsin is a powerful proteolytic enzyme; because of its digestive action, it not only prevents adequate granulation and healing of the fistulous tract, but also, by contamination of the abdominal wound, quite frequently causes delay in wound healing and the even more serious complication of wound disruption.

Throughout the years, such tracts have been treated by various technics, very commonly including one or more surgical attempts to remove the fistula. Such an operation is usually very difficult and frequently unsuccessful because of the necrosis and inflammatory reactions present in this area. Moreover, the second surgical attempt must often be made before the local inflammatory reactions naturally occurring with a previous operation have been cleared from the area. These procedures are attended with a high percentage of failure and a high mortality rate.

The technic herein described was evolved through sheer necessity and undoubtedly could be criticized as lacking the usual experimental approach to substantiate its validity. In this day of modern medicine, many of the "obvious" technics have first been tested by animal experimentation. For example, considerable animal experimentation preceded the now "obvious" surgical approach to mitral stenosis.

The technic about to be described does not carry the weight of preliminary investigation, because the situation with which we were confronted in Case 1 required immediate action. The patient had been operated on for gastric and duodenal ulcers and had developed a fistulous tract that failed to yield to the usual conservative attempts to close it.

A second surgical procedure was carried out, at which time disruption of the duodenal stump was found and repaired with considerable difficulty. Again a fistulous tract developed, and the digestive action of the trypsin in the abdominal incision caused a second disruption. It became necessary to make a decision as to what might be done to save this individual's life, because the problem of nutritional and electrolyte deficit was becoming insurmountable.

Surgical consultation resulted in the opinion that only very complicated ductal transplants might solve this problem. But since the degree of inflammatory reaction seen at the first attempt at repair would by now be multiplied many times, it was felt that the success of such a procedure was highly questionable.

The rather bleak outlook for this patient was somewhat lightened by the physiologic fact that trypsin does not have a digestive action in an acid medium, but only in an alkaline medium such as biliary and duodenal secretions. Therefore, a search was made for information on the local and systemic effects of acidifying the fistulous drainage.

*This paper was submitted to the faculty of the Philadelphia College of Osteopathy in partial fulfillment of the requirements for the degree of Master of Science, April 1957.

No reference was found to the systemic toxicity of such a procedure or to a concentration or type of acid that might be employed without serious damage to either the patient or his tissue. However, another physiologic fact is that hydrochloric acid is produced as a portion of the gastric secretion. Although under normal conditions it is neutralized by the time it reaches the duodenum, it was felt that this "physiologic solution" might be used as an acidifying substance.

The problem then arose as to the proper concentration. Again, there was no way of knowing what concentrations might be sufficiently acid to accomplish the purpose previously detailed and at the same time not produce local tissue reactions that would defeat the purpose for which it was intended. Therefore consultation was held with a biochemist.

It is generally known that the optimum activity of gastric pepsin is at pH 1.5 to 2.5; pancreatic trypsin and chymotrypsin, pH 8 to 9; pancreatic carboxypeptidase and lipase, pH 7 to 8; and pancreatic amylase, pH 6.5 to 7.5. On the basis of this information, it was decided to attempt to maintain the drainage from the fistula at pH 4.5 to 5.0; at this point acidity of gasric pepsin and all the pancreatic enzymes would be greatly reduced and it was hoped that minimal adverse local tissue reaction would be produced.

The patient willingly consented to be the "experimental animal" for this untried medical procedure. He was quite cooperative in assisting to maintain the reflux drainage from the incision in an acid state. As demonstrated in the case history that follows, the "obvious" became fact, and the treatment resulted in closure of the fistulous tract and complete recovery of the patient.

Since the first use of this technic in 1952, it has been employed in 10 cases, 6 of which are reported here. The 4 not reported are markedly similar to some of those described, and all resulted in successful closure of the fistulous tract, in spite of the fact that in 2 of these 4 cases the technic was not used until afer at least one surgical attempt at repair had been made.

Case reports

Case 1. A 38-year-old white man was admitted to the hospital on September 11, 1952, with chief complaint of a sharp burning pain in the right costal arch, radiating primarily to the right scapula, with a secondary radiation in the right costal area.

The pain first started in autumn of 1950, accompanied by hemorrhage from a reputed gastric ulcer. Since that time the patient had been on a dietary program and antacid medication for the management of the ulcer. However, on further inquiry it was found that attendance to this program was rather questionable.

Review of organ systems by both history and physical examination was essentially negative except as previously described.

The patient was a well-nourished man approximately 5 feet 11 inches tall, weighing about 180 pounds. Blood pressure was 120/84 mm. Hg. There was evidence of muscle guarding accompanied by tenderness above the umbilicus and in the epigastric area.

The Department of Radiology reported the possibility of a prolapsing lesion and evidence of an ulcer at the postpyloric cap and in the first portion of the duodenum. However, the presence of an active ulcer was questionable in view of the fact that the stomach and duodenum appeared to be normal on fluoroscopy.

The patient was prepared for operation. Preoperative blood count, urinalysis, and screening of the blood chemistries were all within normal limits. Subtotal gastrectomy was performed on September 17. The patient was returned to his room with an Abbott-Rawson tube in place. On September 20, the patient's wound was redressed, and what appeared to be fecal-like material was found on the dressing. Drainage from the stab wound became very profuse and foul smelling. The skin about the area was markedly macerated, and methylene blue administered by mouth appeared in the incision, thus demonstrating definitely the presence of a fistulous tract.

On September 25, the Abbott-Rawson tube was removed, and on the following day there was evidence of disruption in the incision.

Medical consultation revealed that the patient was markedly hyponatremic and hypoproteinemic. The hyponatremia was corrected with hypertonic saline. Intubation and attempt to reduce the flow of orally ingested substances past the fistula failed, and the amount of drainage increased, as did the degree of digestion of the abdominal wall and incisional area.

On October 12, after 23 days of conservative measures to close the fistula, the patient was returned to the operating room, and a high laparotomy was performed. Disruption of the duodenal stump was found and repaired.

The patient made what appeared to be an appreciable recovery aided by postoperative use of appropriate repair solutions. On October 14, the Abbott-Rawson tube was again removed, and on the following day the patient was started on a soft ulcer diet.

One day later there was again evidence of a fistulous tract, and chemical analysis of the fluid revealed very marked trypsin activity. The succession of events was similar to that already described: there was progressive digestion at the margin of the fistula, and again the wound disrupted.

As previously stated, conference was held at this time, and a decision was made with the full consent of the patient to attempt correction of the condition physiologically by neuralizing the trypsin.

Solutions of tenth normal, twenty-fifth normal, and fiftieth normal of hydrochloric acid were prepared, and continuous drip of these solutions into the base of the fistulous tract was started. Catheters were placed in the fistula to allow a reflux drainage, and the patient was instructed to maintain this drainage in an acid state by periodic testing with Nitrazine Paper. In this way the rate of drip was adjusted to maintain a pH between 4.5 and 5.0.

The rate of flow and concentration was varied as needed on the succeeding days to meet the conditions previously specified. By October 21 it was possible to feed the patient orally with no apparent digestive interference. The quantity of drainage progressively decreased as did the tryptic activity, and on November 6 all evidence of trypsin and bile was absent from the drainage. The hydrochloric acid drip was discontinued.

The wound healed by granulation and the patient was discharged on November 21.

This patient was re-examined approximately 6 months later. He had completely resumed his former occupation of truck driving, with no adverse effect, and was eating a rather broad diet with no evidence of gastrointestinal disturbance.

The time factors of this case are most noteworthy. In the interval of 23 days between first and second operations, all conservative measures failed and the condition of the abdomen and wound became progressively worse. Following the second operation, 5 days

elapsed from the time of appearance of the fistulous drainage until the hydrochloric acid therapy was instituted. After 16 days there was complete closure of the tract in spite of the fact that the condition of the abdominal wall and incision was markedly worse than prior to the second operation.

Also noteworthy is the fact that at no time during the progress of the therapy did the patient experience any pain, nor were there any adverse systemic effects noted as the result of it.

Case 2. A married woman, aged 41, was admitted to the hospital on November 30, 1952, with a chief complaint of pain in the abdomen after eating. The pain was first noted after indulgence in alcoholic beverages, about 2½ years prior to admission.

Since that time there had been periodic episodes of pain with considerable flatulence after meals. The use of a fat-free diet and limitation of alcoholic intake had reduced the frequency of attacks.

. . . at no time during the progress of the therapy did the patient experience any pain

Cardiorespiratory, genitourinary, gastrointestinal, and endocrine histories were essentially negative. Blood pressure was 140/90 mm. Hg. Physical examination revealed no findings of significance other than a positive Murphy's sign. The abdomen was otherwise negative for masses and tenderness, and the liver did not appear to be enlarged.

At exploratory laparotomy on December 2, an enlarged gallbladder filled with stones and adherent to the undersurface of the liver was found. The liver was studied with semisoft masses which appeared to be cystic. The surgeon was unable to demonstrate patency of the common bile duct although it was not dilated. Cholecystectomy, exploratory duodenotomy, cholecystoduodenostomy, and choledochostomy were performed.

The immediate postoperative course was uneventful for 3 to 4 days, and the Penrose drain was removed. Approximately 3 days later the T tube suddenly ceased to drain, and the patient developed symptoms of peritonitis.

The incision was opened and the area was drained of large amounts of bile, and the patient was treated for peritonitis. A Miller-Abbott tube was passed, and x-ray therapy and appropriate repair solutions were given to maintain electrolyte balance and nutrition.

On December 10, a duodenal fistula developed. Feeding became a problem because of contamination of the abdomen with trypsin as well as with the substances fed.

It was elected on December 15 to utilize a continuous drip of one-tenth normal hydrochloric acid, and again attempts were made to maintain the pH between 4.5 and 5.0.

The patient's progress was rather stormy, and there was considerable difficulty in maintaining electrolytic balance. On December 27, at the request of her family, the patient was transferred to another institution.

Evaluation of the abdominal condition at this time showed that the total drainage had decreased but was still appreciable.

Subsequent report from the institution to which the patient had been transferred was that surgical repair was attempted and that the patient died immediately postoperatively.

Case 2 represents a situation quite similar to the one cited in the previous case. However, the second patient's age probably affected her capacity to respond to treatment. Also, the duration of treatment was only 12 days; in view of the other experiences, this might be considered comparatively short. From other experiences it is also known that, although the drainage may appear to be minimally reduced, it seems to cease abruptly rather than to show a progressive decrease in quantity. Perhaps continuation of the drip therapy would have been successful in this case. Certainly surgical attempt to repair failed.

Case 3. A markedly obese, white married woman, aged 61, was admitted to the hospital on December 27, 1954, complaining of pain in the lower left quadrant and in the middle of the back.

Past history was that of multiple surgical procedures. The first was in 1941, when a bilateral salpingo-oophorectomy, subtotal hysterectomy, and appendectomy were performed. The final diagnosis at that time was primary carcinoma of the ovary, fibrolipoma of the uterus, and pelvic inflammatory disease.

She was readmitted on December 19, 1951, for surgical attempt at mobilization of multiple adhesions in the pelvis, and at that time a loop colostomy of the sigmoid colon was performed.

At the next admission on May 4, 1952, the following surgical procedures were carried out: a second stage colostomy, resection of the ileum (ileoileostomy with side-to-side anastomosis), sigmoid colectomy with end-to-end anastomosis of the sigmoid and descending colon, and mobilization of the ileum and jejunum. Final diagnosis on this admission was endometriosis, malignant thecoma, and carcinoid of the sigmoid. During this admission the patient developed a fecal fistula that closed prior to her discharge.

At the time of her admission on December 27, 1954, the patient cited the foregoing history. Examination showed a markedly obese woman with a blood pressure of 180/90 mm. Hg. The heart appeared to be enlarged to the left. Frequent extrasystoles were present, and a systolic murmur, grade 2 in intensity, was heard at the apical and mitral areas.

On December 30 an exploratory laparotomy was performed, consisting of removal of a pelvic tumor, lysis of adhesions, and jejunostomy.

On January 6 the patient developed a fistulous tract, the drainage from which was definitely fecal in nature. Two days later the second surgical attempt was made, with resection of adhesions and a transverse loop colostomy.

By January 16 the patient had developed evidence of a jejunal fistula in addition to the fecal fistula, which had not been controlled by the second operation.

On the same day, hydrochloric acid drip was instituted, and an attempt was made to maintain the same pH as in Case 1. In one week it was possible to discontinue the hydrochloric acid drip. The drainage from the high abdominal fistula had ceased but the fecal fistula continued to drain, although in decreasing quantity.

The patient was discharged on February 12, still

with some minimal drainage from the fecal fistula, which subsequently closed. The final diagnosis was granulosa cell tumor of the pelvis, acute peritonitis, fecal fistula, and jejunal fistula.

This case represents a situation in which the patient's physical condition and tissue status were most certainly favorable for the formation of fistulous tracts. Again there was successful closure of a fistula that contained large amounts of trypsin. The question might be raised as to why such attempts have not been made in the case of fecal fistulas. The answer can only be that the same degree of trypsin activity has not been successfully demonstrated in this type of fistula. The period during which the drip was required was much shorter in this case, possibly because it was instituted immediately upon the appearance of the drainage containing large amounts of trypsin.

Case 4. The patient, a man aged 48, was admitted to the hospital on May 5, 1956, with a provisional diagnosis of acute gastric retention. The chief complaint on admission was pain, which seemed to be located principally in the precordial area. It was first experienced 3 days earlier, after the patient had eaten, and was localized to the precordium.

The patient consulted his family physician, and roentgenographic examination revealed gastric retention. Approximately 1 hour after the roentgenogram, the patient vomited barium and, later in the evening, a vomitus the color of liquid tea. After that he had nothing by mouth until after operation.

Previous history revealed evidence of an epigastric discomfort that was relieved by an alkalizing agent. The patient had lost approximately 8 pounds during the past year and his appetite had been poor.

Past personal history was noncontributory. His blood pressure was 124/64 mm. Hg. A herniorrhaphy scar was present in the lower left quadrant of the abdomen, and there was some tenderness in the epigastric area.

The roentgenographic report advised us to "consider organic obstructive lesion at the pylorus or possible cap obstruction."

On May 10, a subtotal gastrectomy and anterior jejunostomy were performed. The posterior gastric wall and prepyloric segment were markedly thickened and indurated and showed signs of chronic recurrent inflammation. The pathologist's report identified the specimen as a healed ulcer from the pyloric end of the stomach. The final operative diagnosis was obstruction with cicatricial duodenal ulcer.

Postoperatively the patient was managed by use of an Abbott-Rawson tube; he was fed through the jejunal side of the tube while suction was applied to the gastric side of the tube. The day after operation the tube was clamped and withdrawn, and the patient was fed orally.

Six days later, a small separation of the incision was noted, apparently explaining the spiking temperature present from the time of operation. Drainage of this area was established, and the spiking ceased. However the incisional defect increased, accompanied by considerable pain, and on May 21 drainage of bile-colored fluid from this site was noted. At this time the patient also developed vomiting with a diminished breath sound over the lower right lobe of the lung.

The discharge of bile-colored fluid became more profuse, and the vomiting increased in frequency. A Levin tube was passed on May 28, and continuous suction was applied. During this interval, serial electrolyte and protein studies were made so that the patient could be maintained in nutritional and electrolyte balance.

The initial drainage was thought to be from an infected wound. However, despite antibiotic therapy the discharge became more profuse. On May 30, after the edge of the wound had become macerated, analysis of the drainage revealed a marked degree of trypsin activity.

Continuous drip of hydrochloric acid in varying concentrations from one-tenth to one-fiftieth normal was instituted and maintained by use of nitrazine papers at a pH of 4.5 to 5.0.

The response in this case was quite prompt; drainage from the area ceased on June 4. Healing by granulation continued with no further difficulty.

It should be noted that it took a week for the fistulous tract to reach the surface. The spiking temperature in the interim can unquestionably be explained by the lytic process in the developing fistula. There was also a 13-day interval, from May 17 to 30, during which the quantity of drainage and degree of local maceration of the skin progressively increased before the hydrochloric acid drip was instituted. This case shows a rapid response, with only about 5 days elapsing from the institution of therapy until the drainage ceased.

Case 5. A married woman, aged 54, was admitted to the hospital on September 24, 1956, with a provisional diagnosis of intestinal obstruction.

The patient gave a history of sudden onset of severe abdominal pain that radiated into the right side and back. It was preceded by a light-colored stool. The patient had been on a dietary program for the treatment of gallbladder disease.

The abdomen was markedly distended and rigid. It was extremely tender to palpation and there was severe pain, apparently radiating posteriorly on the right side. Pulse rate was 92, blood pressure 100/60 mm. Hg, and temperature 96.0 F. Recent roentgenograms of the upper gastrointestinal system had revealed

. . . inactivation of trypsin by an acid medium may prevent serious damage to the tissues

"healed ulcer with a narrowing of the duodenum and/or cap."

Emergency measures were instituted, and 12 hours later the patient was operated on. Perforation of the cap ulcer was found. Closure of the perforated ulcer and a sigmoidostomy were performed. Approximately 1,500 to 2,000 cc. of fluid were aspirated from the abdomen.

The postoperative course was stormy. A Miller-Abbott tube was passed, and electrolyte balance was controlled by means of appropriate repair solutions.

On the first of October, the patient vomited blood, and the blood pressure dropped abruptly to 80 systolic and 0 diastolic, with a pulse rate of 90. The bloody vomitus became more profuse. Transfusion was instituted, and within a period of less than 24 hours, 14,000 cc. of blood were given. The patient was then taken to

surgery in a very critical condition. A subtotal gastrectomy and gastrojejunostomy were performed.

Again the postoperative course was very stormy. Accumulation of large amounts of bloody fluid in the left thorax necessitated thoracentesis. On October 12 there was evidence of drainage from an abdominal fistula and disruption of the wound. Examination of the drainage revealed large amounts of trypsin and bile. Hydrochloric acid drip was immediately instituted.

Again, concentrations of one-tenth to one-fiftieth normal acid were utilized to keep the pH between 4.5 and 5.0. As many as 2,000 cc. of twenty-fifth normal hydrochloric acid were utilized per day in this case. Treatment was continued until October 25, at which time drainage stopped abruptly and the fistulous tract began to heal by granulation. In the interim, the wound disrupted with exception of the skin, but by careful control of the reflux fluid no further disruption of the wound was encountered. In the previous case, when the control was not adequate, maceration and further disruption were caused by the drainage of trypsin from the fistulous tract.

The patient was discharged from the hospital, ambulatory, on November 10, with no further evidence of fistulous drainage; the wound healing appeared to be adequate.

This case demonstrates another of the multiple complications preceding the development of a fistulous tract from which large amounts of trypsin were draining. Perhaps the prompt institution of therapy was the cause of the very adequate response which occurred in spite of the patient's poor clinical condition and the poor status of the abdominal incision. This argues for early recognition and institution of therapy in these cases.

Case 6. A married woman, aged 70, was admitted to the hospital on February 14, 1957, with a chief complaint of episodes of pain in the upper right quadrant and passage of large amounts of gas by rectum. The attacks had been present for approximately 10 years and were worsened by eating or by emotional disturbance. The patient had been restricted to a gallbladder diet.

During the past year, she had lost approximately 14 to 20 pounds, and on further inquiry it was found that the pain most commonly appeared about 2 hours after eating. It did not seem to radiate through to the back or into the right scapular area. During these attacks, the urine was very dark. The patient gave an essentially negative cardiorespiratory and genitourinary history except for reporting an occasional dizzy spell.

On physical examination, the blood pressure was 136/70 mm. Hg., and the temperature 102.0 F. The heart was not enlarged, breath sounds were within normal limits, and the liver and the spleen were not palpable. There was a tenderness in the epigastric area, and it was felt that perhaps there might be a mass at this level. On percussion there was marked tenderness over the liver.

The provisional diagnosis was carcinoma of the head of the pancreas, cholangitis, cholecystitis and/or cholelithiasis, and pancreatitis.

The fasting blood sugar level on admission was 216 mg. per 100 cc. Urinalysis showed 25 to 30 leukocytes per high-powered field, with albumin 3 plus and sugar 4 plus. The serum bilirubin was 8.4, and the icterus index 39. Alkaline phosphatase, inorganic phosphorus, blood urea nitrogen, and other tests were within normal limits.

The patient became progressively more jaundiced during the ensuing hospital days. She was treated for cholangitis with intravenous Terramycin, and there was complete remission of fever.

The leukocyte count on admission was 16,000; this fell to 8,900 on February 19. The thymol turbidity rose to 7.0, alkaline phosphatase to 10.2, and inorganic phosphorus to 3.69. Trypsin activity in the stool was negative.

It was believed that roentgenographic studies of the stomach and duodenum revealed some change in the duodenal loop at approximately the level of the ampulla. No attempts were made to take a cholecystogram because of the jaundice.

The jaundice seemed to be decreasing, but in view of the highly positive physical findings and suggestive evidence of an obstructive lesion, operation was performed on March 2. It was discovered that the reason for remission of the jaundice prior to operation was a small fistulous tract between the gallbladder and duodenum. The common bile duct was completely obstructed by incarcerated stones, and the rather lengthy operative repair required approximately 4 hours. Exploration of the common duct, cholecystectomy, duodenotomy, and T-tube choledochostomy were carried out. No malignant lesion was found.

The patient's immediate postoperative course was reasonably uneventful, and she was given ambulatory and chair-rest privileges. In the interim, the diabetes discovered was controlled with long-acting insulin and crystalline insulin.

On March 9, the T tube ceased to drain, but drainage through the stab wound increased progressively. The abdominal incision disrupted and was resutured, and hydrochloric acid drip was instituted on March 13, since the drainage contained large amounts of trypsin.

Late the next afternoon, the patient developed evidence of severe shock: rapid fall in blood pressure to the levels of 60 systolic and 0 diastolic, and pulselessness. Therapy for shock included Trendelenburg position, oxygen, and intravenous Levophed. Investigation disclosed that the Foley-Alcock catheter utilized in the drip technic had become obstructed. It was irrigated and its function restored, and the patient recovered from shock in approximately 6 hours.

The leukocyte count on the evening of March 14 was 37,500, of which 20 per cent were band cells, 5 per cent metamyelocytes, and 75 per cent segmented neutrophils. Hematocrit reading was 43 per cent. It was feared that this represented a reflux into the pancreas and/or the liver, with the possibility of a necrotizing pancreatitis. Antibiotic and supportive fluid therapy was instituted; the leukocyte count fell progressively until March 20 when it was 8,900 with an average differential distribution.

During the time when the patient's condition was considered critical, the hydrochloric acid drip therapy was continued in spite of the fact that it was evident that the condition involved not a simple fistulous tract, but perhaps a major disruption of the duodenum.

The patient died on March 22 at 5:50 a.m. Autopsy disclosed two holes in the duodenum; the largest was approximately 1 cm. in diameter and the other was about half that size. In that area there also appeared to be a pocketing of the contents draining from the duodenum.

Most interesting and perhaps significant was the fact that in this area there was no trace of proteolytic digestion and a very minimal degree of fat necrosis. It was the pathologist's opinion that the absence of

these findings probably was caused by trypsin activity being neutralized by the hydrochloric acid, permitting a more profuse involvement, even perhaps diffuse peritonitis that at no time was manifest by such physical signs as rigidity and tenderness over the abdomen.

Despite the high leukocyte count at the time of the acute episode, there was on gross study neither evidence of pancreatic involvement nor involvement of the hepatic radicles.

The foregoing case, although terminating fatally, represents one in which the necropsy findings substantiated the opinion that inactivation of trypsin by an acid medium may prevent serious damage to the tissues.

Discussion

Between 1952 and 1957, 4 additional patients have been treated on the various services in our institution by the hydrochloric acid drip technic. In 2 of the 4 cases, treatment was instituted at early appearance of the fistula, with successful closing; in the other 2, it was begun after at least one surgical attempt to repair the fistula. In all 4 cases, the pattern was similar to that described and therefore does not need to be reported in detail. The 4 cases were successfully terminated.

It is interesting to consider the varying details and the technical application of hydrochloric acid to the fistulous tract.

In Case 1, the procedure was rather crude. A small rubber catheter was introduced to the base of the incision and the hydrochloric acid allowed to drip through it. Other catheters drained the incision to an emesis basin placed at the patient's side. A rubber sheet surrounded the patient, and the skin was protected as well as possible from chemical damage by various pastes which were applied as needed. The patient was instructed in the use of Nitrazine Paper in order to check the pH of the drainage periodically and maintain the acidity as specified.

Throughout the years, various technics were tested. A polyethylene catheter was substituted for the rubber catheters, and in the later cases, thanks to the suggestion of a colleague, the following technic has been used with maximum success.

Polyethylene tubing is threaded through one side of a Foley-Alcock catheter. The catheter is introduced into the base of the incisional area, the polyethylene tubing being passed to the base of the incision. It is necessary to keep the drip at the deepest portion of the incision in order to neutralize the trypsin immediately as it appears from the intestinal tract. The outside of the catheter is attached to continuous suction and the balloon is inflated with pressure sufficient to hold it snugly in the abdominal wall. This prevents all reflux over the abdomen, maceration around the fistulous tract, and adverse incisional healing, as cited in a number of the cases.

Such technic makes the control of the pH by the patient more difficult, but the attending staff or nursing staff can check the pH hourly or approximately every 2 hours, and adjust the rates of the drip and flow as necessary.

Another modification is one in which a Foley catheter is used. The polyethylene tubing is passed through the incision and then the balloon on the catheter is inflated, to hold the polyethylene tubing, and the lumen of the catheter is utilized for suction. It is necessary to check and irrigate the suction end periodically in order that no obstruction will occur; Case 6 illustrates the possibility of such a phenomenon.

It is impossible to specify a rate of flow or concentration of the solution. It has been our policy to utilize the highest concentration initially, and as the rate of flow necessary to control the pH becomes rather slow, the next weaker concentration is then utilized. In certain cases as much as 2,000 to 3,000 cc. of one twenty-fifth normal hydrochloric acid have been used in a single 24-hour interval.

The percentage of cases successfully treated by this technic is high as compared with figures usually cited for surgical repair or conservative treatment for the same condition

Conclusions

Six cases have been described in which a medical technic was utilized for treating duodenal and common bile duct fistulas. Four other cases have been cited. The percentage of cases successfully treated by this technic is high as compared with the figures usually cited for surgical repair or conservative treatment for the same condition.

It is admitted that we chanced adverse effects by applying this technic to human beings before testing it on experimental animals. However, departure from the usual scientific procedure seems to have been justified in view of subsequent experiences.

Above all, it is felt that the experiences reported demonstrate the value of reviewing the precepts of the basic sciences and applying them to the treatment of disease. The procedure is by no means complicated, once it is described. The usual comment is, "It is an obvious solution," and yet, in our medical world today, perhaps there are many "obvious" solutions being ignored because of their simplicity.

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Acknowledgment

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PULMONARY EDEMA*

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PULMONARY EDEMA is an excessive amount of fluid in the alveolar walls with transudation into the alveolar spaces.

Etiology

Pulmonary edema usually follows pulmonary congestion, although it can occur as a result of conditions other than congestive heart failure.

Left heart failure is one of the more common causes of lung edema. Aortic stenosis or insufficiency, coronary artery disease or occlusion, mitral disease, and congenital heart disease are some of the causes of left heart failure.

Other causes of pulmonary edema include inhalation of irritant gases, hypoproteinemia, pulmonary infarction, obstructive emphysema, polycythemia vera, glomerulonephritis, beri-beri, overhydration, brain damage, pneumonia, collagen diseases, severe burns, insulin shock, liver disease, antigenic shock, and lung trauma.

Pathologic physiology

The three basic factors thought to enter into the production of pulmonary edema are increased pulmonary capillary blood pressure, increased capillary permeability, and the retention of sodium and water.

An increase in the pulmonary capillary blood pressure may lead to formation of edema in one of two ways. First, the mere stretching of the capillary wall may increase its permeability. Second, the balance between capillary blood pressure and capillary osmotic pressure may be disturbed. The capillary blood pressure forces plasma out of the capillaries and into the intercellular spaces, while the osmotic pressure within the capillaries drains the intercellular fluid back into the capillaries. The normal plasma osmotic pressure is 25 mm. Hg, while the pulmonary capillary blood pressure is from 2 to 8 mm. Hg.[1] Therefore, it would seem that any increase in pulmonary capillary blood pressure above 25 mm. Hg could cause excessive amounts of fluid to be forced into the alveolar walls and spaces. As one-sided as this balance appears to be, some transudation does occur in individuals with no imbalance. The lymphatic system is responsible for disposing of most of this fluid. However, when the transudation becomes excessive, the lymphatic system becomes engorged, and the relatively narrow right lymphatic duct constitutes a bottleneck in the removal of this fluid.

Hydrothorax may accompany pulmonary edema as a result of increased pressure within the veins that drain the parietal and visceral pleura. The veins of the parietal pleura drain into the vena cava, while those of the visceral pleura drain into the pulmonary veins.

Another cause of pressure balance upset within the capillaries is a reduction in the plasma proteins to below their normal levels. The resultant reduction in capillary osmotic pressure may disturb the balance and allow fluid to escape into the alveolar spaces. Some of the causes of a low plasma protein level are severe burns, starvation diets, and extensive liver or kidney damage.

Hypoxia, whatever its cause, increases capillary permeability and formation of edema. The blood circulating through the pulmonary capillaries is very low in oxygen, so the capillary wall must depend upon inspired air for most of its oxygen supply. When edema is present, the gaseous exchange is altered and greater and greater degrees of hypoxia are produced. This vicious circle may continue to fatal termination.

Lung infection and the inhalation of irritant gases also are causes of increased capillary permeability. This altered permeability allows for more free passage of fluids across the capillary membrane. In the presence of infection, the lymphatics may also be disturbed, thereby reducing the ability of the lymphatic network to remove fluid from the alveoli.

Bland[2] feels that edema and ascites can be present only when insufficient quantities of sodium and water are being excreted. This idea applies principally to peripheral edema, but should also be considered in pulmonary edema. Sodium retention may be due to tubular reabsorption and/or a decreased renal blood flow. Merrill [3] found that when the cardiac output is reduced to one-half, the renal blood flow is reduced to one-fifth. This would imply that salt and water retention is at least partly due to a decreased filtration rate. An excess of electrolytes in the circulating blood is thought to stimulate the posterior pituitary to secrete the antidiuretic hormone and thereby cause more sodium to be reabsorbed.

Guyton,[4] in his discussion of pulmonary edema following brain damage, feels that sympathetic stimulation causes a generalized constriction of the systemic circulation, while the pulmonary circulation, which is poor in sympathetic control, does not constrict to such a degree. The systemic circulation forces a large volume of bood into the right heart and in turn into the pulmonary circulation. The left heart is unable to force this large volume out of the pulmonary circulation at a similar rate because of the added resistance produced by the peripheral vascular resistance. Thus pulmonary congestion, followed by edema, results.

*This paper, submitted in partial fulfillment of the requirements for certification by the American Osteopathic Board of Radiology, was prepared during a residency under the direction of George W. Rea, D.O., chairman of the Department of Radiology at Kirksville Osteopathic Hospital.

The basic mechanism behind the production of azotemic edema is not known. It was formerly thought that this condition was caused by alteration in permeability of the capillary membrance by toxic metabolites. This view is generally disregarded now. Sante[5] feels that the edema is probably located interstitially around the bronchovascular structures rather than in the alveolar spaces.

Clinical findings

The patient with acute pulmonary edema, regardless of its cause, experiences some or all of the following symptoms: Dyspnea and tachypnea develop early, followed by the production of large amounts of frothy sputum that is often pink tinged. Production of sputum is apt to be very profuse. The temperature may be normal or elevated; an elevated temperature may signify the presence of a secondary infection.

Other signs and symptoms depend upon the cause. For the sake of simplicity the patient with pulmonary edema may be placed in one of two general classifications:[6] The first group may be characterized by the hypertensive patient. This patient's blood pressure may be as high as or higher than his normal level. In the second group, which includes coronary occlusion, antigenic shock, and pulmonary embolism, the patient presents the picture of mild to serve shock. The blood pressure is low and the pulse is rapid and weak.

Fig. 3. Edema resulting from overhydration, caused by overloading the vascular system with intravenous fluids.

Fig. 1. Pulmonary congestion following left heart failure.

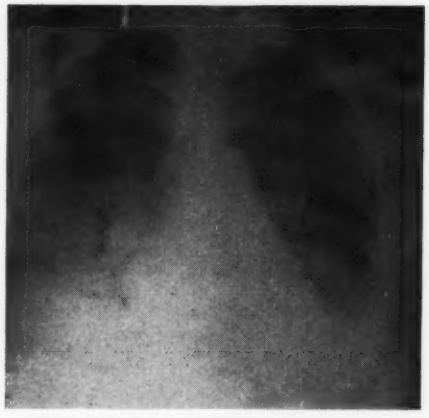

Fig. 2. Edema formation, an event commonly following pulmonary congestion.

Roentgenographic appearance

The roentgenographic findings vary with the cause. However, the classical picture is that seen in left heart failure. Such a patient first shows engorgement of the pulmonary blood vessels indicating pulmonary congestion (Fig. 1).

Congestion is followed by edema. The heart then appears enlarged, the hili engorged, and a fairly symmetrical, homogeneous density is seen involving both lungs with a butterfly-like distribution (Fig. 2). The density is greatest at the hili and it fades out toward the periphery, with the bases and apices usually clear. Compensatory emphysema may be seen involving the unaffected portions of the lungs.

The edema may, however, blank out an entire lung, suggesting a massive pleural effusion, while the other lung remains well aerated. This involvement is most often seen in the right chest of a cardiac patient who feels that a sufferer from heart disease should not lie on the left side. The edema may become symmetrical when the patient is placed on the other side.

Overhydration caused by overloading the vascular system with intravenous fluids may also cause pulmonary edema (Fig. 3). Roentgenographically this appears as blotchy areas of increased density, especially in the lower lung fields. The collection of fluid may be unilateral if the patient lies on one side exclusively. Discontinuance of fluids causes disappearance of the edema.

Azotemic edema presents a fairly characteristic picture. The blotchy patches of edema are concentrated in the hilar areas and the inner zones of the lungs, while the peripheral areas are clear (Fig. 4). A lateral view of the chest will show the infiltration to be centrally located. The cardiac silhouette is not enlarged

unless there is coexisting cardiac disease. The edema clears readily when the precipitating factor is brought under control.

Pulmonary edema may at times present a very atypical picture in which the blotchy areas of infiltration are located in the upper portions of the lungs while the bases remain clear[7] (Fig. 5). The shifting areas of infiltration seen in Löffler's syndrome may be due at least in part to pulmonary edema.[8]

Hydrothorax may often complicate pulmonary edema. Areas of encapsulated pleural effusion may make a diagnosis difficult.

Pneumonia may cause or complicate pulmonary edema and may make it impossible to determine which was the basic etiologic factor.

Management

The therapy used in pulmonary edema, like the diagnosis, depends upon the cause. There are, however, two basic types of treatment: physiochemical and pharmacologic.

1. Physical and physiochemical. Oxygen is indicated in all cases of pulmonary edema. Good aeration is necessary to combat the hypoxia. Oxygen may be administered by either nasal catheter or positive pressure apparatus. Breathing against pressure may cause some increase in pressure in the bronchi and alveoli, thus possibly counteracting the high pulmonary capillary blood pressure and reducing the rate of transudation. Positive pressure breathing may decrease the venous return and is therefore contraindicated in cases of shock. Carlisle[9] treated pulmonary edema caused by inhalation of toxic fumes with 100 per cent oxygen without a death in 9 years.

Oxygen therapy can be of little value unless it reaches the fluid-filled alveoli. When the surface tension of this accumulated fluid reaches a certain level, foaming occurs, further blocking the entrance of oxygen. Alcohol-oxygen vapor helps to reduce the surface tension and thereby combats foaming. Goldmann and Luisada[10] reported excellent results in 12 of 14 cases of acute pulmonary edema treated with alcohol-oxygen vapor exclusively.

Sitz baths may be of some value, since they cause peripheral vasodilation and a decreased venous return.

The use of tourniquets and venesection is helpful in reducing the venous return, but they are of course contraindicated in cases of shock.

2. Pharmacologic. Morphine sulfate is one of the most widely used drugs in the treatment of pulmonary edema. This is due in part to its use in the treatment of coronary occlusion, which is often a precursor of edema. While all the actions of morphine are not known, it is thought to depress the respiratory center and thereby lessen the dyspnea. It also helps to allay the patient's apprehension.

Digitalis glycosides may be either helpful or harmful. If the left ventricle is not damaged beyond stimulation, as in the case of a recent massive infarction, and if no danger or overstimulation of the right ventricle exists, digitalis may be very effective. However, if the left ventricle is severely damaged, or mitral stenosis is present, stimulation of the right ventricle may worsen the edema, rather than lessen it.

Atropine is indicated in cases of central nervous system damage in which bradycardia is present. Tachycardia is to be avoided in other cases, which would contraindicate the use of this drug. Demerol, with its atropine-like action, falls into the same category.

Mercurial diuretics may be helpful, but usually their action is not rapid enough to aid in treatment of the acute attack.

Antiobiotics are indicated in cases of pulmonary edema due to pneumonitis and may be useful in avoiding secondary pneumonitis in other cases.

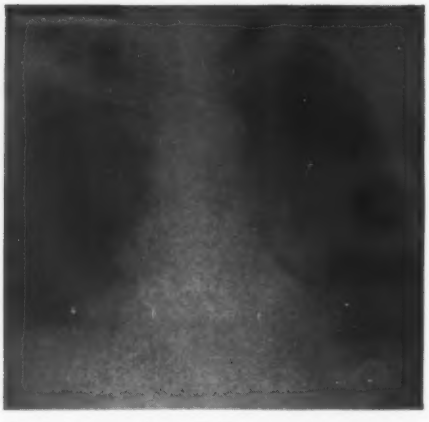

Fig. 4. Azotemic edema. Fluid concentrations are in the hilar areas and the inner zones of the lungs, while the peripheral areas are clear.

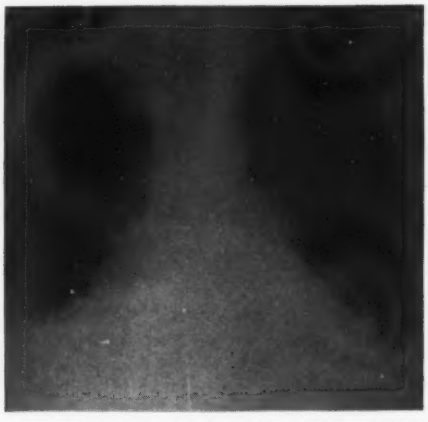

Fig. 5. Atypically located areas of infiltration, showing blotchy infiltration in the upper portions of the lungs while the bases remain clear.

Summary

The causes of pulmonary edema are many. However, there are three basic mechanisms responsible for formation of edema: increased pulmonary capillary blood pressure, increased capillary permeability, and sodium and water retention.

The patient may be hypertensive or in shock. The symptomatology depends upon the category into which the patient falls. The roentgenogram may be complicated by hydrothorax or atypical location of the infiltrated areas.

Treatment is directed toward oxygenation of the

capillary membrane, decrease of the venous return, and stimulation of the heart.

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Recognition of COR PULMONALE*

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MANY PHYSICIANS FAIL to identify cor pulmonale until little can be done for the patient, or until unnecessary suffering has been endured. Why should this disease go unrecognized until the internist is called, or the patient is obviously ill with pulmonary heart disease? It appears that many of us have scattered bits of information, but there has been a lack of correlation of this information into a clear concept of the disease.

The specialist in internal medicine must have an understanding of cor pulmonale equal with present-day medical research, laboratory procedures, and clinical skill. It is my desire to present here a compilation of recent thought and technics of diagnosis that will help in the early recognition of pulmonary heart disease.

Cor pulmonale or pulmonary heart disease is concerned with the production of strain and failure of the right side of the heart as a result of a group of lesions, any of which is capable of producing pulmonary hypertension. The syndrome that results is complicated to a greater or lesser degree by the primary disease process.

Luchsinger and associates[1] suggest that pulmonary arteriolar resistance is functional and reversible or organic and irreversible. The functional and reversible type is a consequence of alveolar hypoventilation that occurs in bronchial asthma, emphysema, kyphoscoliosis, poliomyelitis, and myasthenia gravis. The hypoventilation produces increased alveolar carbon dioxide and decreased alveolar oxygen. This results in an increase in pulmonary vascular resistance and subsequent pulmonary hypertension with eventual cor pulmonale. The organic and irreversible type is found in such conditions as advanced tuberculosis or the pneumoconioses, and in connection with multiple pulmonary emboli or extensive pulmonary resections. These entities produce a decrease in the cross sectional area of the pulmonary capillary bed, and in the presence of normal ventilation a fixed pulmonary resistance exists. Pulmonary hypertension occurs upon an increased demand, as in exercise, or the process may be far enough advanced that pulmonary hypertension is present during rest. The eventual result of prolonged pulmonary hypertension, cor pulmonale, finally ensues. Luchsinger and his associates feel that restriction of the capillary bed is a major factor in development of cor pulmonale and that it also results in simultaneous development of diffusion insufficiency for oxygen in the lung.

Diffusion insufficiency for oxygen is a failure of equilibration between the oxygen tension in the alveoli and that attained by the capillary blood in its transit past the alveolar spaces. A gradient develops between alveolar and end capillary oxygen tension that is reflected in an abnormal alveoloarterial oxygen gradient. With sufficient widening of this A-a gradient, arterial desaturation may proceed to a level at which cyanosis is clinically detectable. The term "alveolar capillary block" has been used to describe this condition. This implies a thickened alveolar capillary membrane obstructing gaseous exchange.

Luchsinger and co-workers[1] feel that this theory

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neglects pulmonary capillary dynamics. What is the role of circulation in diffusion insufficiency? Their formula,[1] described in Table I, defines the factors involved in the diffusion of gases across a membrane, with specific reference to the lung and oxygen diffusion. It also indicates that the interdependence of cardiac and pulmonary phenomena requires further explanation. Only by combined cardiac and pulmonary studies can (t), the time of contact, be satisfactorily defined. This is a physiologic, not an anatomic, barrier.

In the normal human being at rest there is a relatively high arteriolar resistance. With exercise, decreased arteriolar resistance occurs, due to the opening of the capillary beds. A normal pulmonary artery pressure is maintained in the presence of as great as a two- to fourfold increase in pulmonary blood flow. Luchsinger and his associates studied 10 patients with established diffusion insufficiency for oxygen. The patients had a fixed pulmonary resistance due to pulmonary fibrosis, extensive resection of lung tissue, and multiple emboli. At rest, most of the available capillary bed is perfused. With exercise, few or no additional beds are available to decrease pulmonary resistance. The increased pulmonary blood flow against a fixed resistance produces pulmonary hypertension and cor pulmonale. This increased rate of flow does not permit sufficient time for equilibration to occur between alveolar and capillary oxygen tensions. The A-a oxygen tension gradient is widened, and arterial desaturation occurs; that is, a diffusion insufficiency for oxygen is noted. Breathing a high concentration of oxygen is of little or no value, as too little time is allowed for gaseous exchange.

Idiopathic, solitary, or primary pulmonary hypertension produces a different picture. There is atheromatous thickening of the media of the pulmonary arterioles. The problem is not one of actually less vascular bed to be utilized, but apparent inability of the vascular bed to decrease the pulmonary resistance by dilatation of the small arterioles. The work of Shepard and coworkers[2] Heath, Whitaker, and Brown,[3] and Evans, Short, and Bedford[4] indicates that the cardiac output is usually low and that consequently arterial desaturation does not occur.

The diseases capable of producing cor pulmonale may be divided into four general groups: diseases of the lung parenchyma, diseases of the pulmonary vascular system, deformities of the thoracic cage, and primary heart diseases. This grouping and the various subheadings are described by Reich.[5] Acute and chronic cor pulmonale are discussed separately and extensively by Goldberger.[6] Since the present discussion deals primarily with the chronic form, suffice it to say that practically all causes of acute cor pulmonale are thromboembolic and are characterized by the sudden appearance of symptoms.

From a diagnostic standpoint Hecht's[7] physiologic grouping of the forms of cor pulmonale simplifies the physician's problem of identification of the disease. He has essentially three groups: pulmonary hypertensive heart disease, emphysematous heart disease, and the mixed forms, such as combinations of pulmonary hypertensive heart disease and emphysematous heart disease. Kyphoscoliotic heart disease clearly represents a combination of the two types and should be included in the mixed forms. Pulmonary hypertensive heart disease includes these causes: primary pulmonary hypertension, pulmonary stenosis, massive thrombosis of a major branch of the pulmonary artery, and multiple repeated emboli to the lung. Pure mitral stenosis may produce a situation that is essentially the picture of primary pulmonary hypertensive heart disease. This is probably the result of secondary vascular changes due to prolonged pulmonary vascular congestion, high capillary and arteriolar pressure, and pericapillary and interalveolar edema. The problem of valvular obstruction is insidiously overshadowed by secondary obstruction of the pulmonary vascular tree. Emphysema heart disease is the result of chronic obstructive emphysema with or without fibrosis. The mixed forms of cor pulmonale are caused by such diseases as advanced tuberculosis, the pneumoconioses, sarcoidosis, coccidiomycosis, some congenital cardiac diseases, and kyphoscoliosis.

Within the scope of this paper I do not hope to include a complete history or discussion of each entity capable of producing pulmonary heart disease. The symptoms and signs of the primary disease will be present in degrees consistent with the severity of the primary disease process. I am of necessity limiting this discussion, in the main, to the signs and symptoms of pulmonary hypertension and pulmonary heart disease. The symptoms and physical findings of emphysema heart disease will be discussed separately. The mixed forms of cor pulmonale will show evidence of both processes in varying degrees, depending upon the degree of pulmonary hypertensive heart disease and emphysema heart disease present.

The history will vary according to the primary disease process. If the basic pathologic process is one of the pneumoconioses, such as anthracosis, a history consistent with that disease will be elicited. If the basic problem is tuberculosis, a history of chronic cough, weight loss, and night sweats will probably be given. The patient with an emphysematous chest may well give a history of chronic bronchitis or bronchial asthma. An individual with marked kyphoscoliosis and a complaint of increasing dyspnea and cyanosis would certainly make one seriously consider the pulmonocardiac syndrome of kyphoscoliotic heart disease. A history of sudden chest pain and dyspnea, particularly in the presence of phlebothrombotic disease of the lower extremities or pelvis, would point to embolic disease of the lungs and all its sequelae. A prolonged febrile disease with associated joint pain and swelling or an outright history of rheumatic fever could indicate the ex-

Cor pulmonale, poorly recognized in the past and inadequately studied, has suddenly received considerable attention because of the ability to evaluate cardiac and pulmonary function simultaneously

istence of mitral valve disease. Very sudden onset of dyspnea and fatigue, particularly in a female, would be highly suggestive of primary pulmonary hypertension.

The most common symptoms of pulmonary hypertension and pulmonary hypertensive heart disease are exertional dyspnea, frequent coughs and colds, and anginal chest pain. Cyanosis of the lips and nail beds, abdominal swelling, and ankle edema occur if cor pulmonale appears. Less common symptoms are hemoptysis, jaundice, syncopal attacks, and palpitation.

The physical signs are cyanosis, due to low cardiac output and venous congestion, and a large auricular wave at the jugular vein, which becomes less obvious with the onset of heart failure. This wave may also be overshadowed by the systolic wave of tricuspid incompetence. The blood pressure is usually low and is always low late in the disease. The circulation time is prolonged when heart failure ensues. There may be a parasternal heave and a systolic lift over the right ventricular outflow tract. The pulmonic second sound may be palpable and is accentuated. According to Hecht[7] an accentuated pulmonic sound is present when the second pulmonary sound (1) is much louder than the first, (2) is louder than the second sound in the aortic area, and (3) when the first aortic and pulmonary sounds are of about equal intensity. The sign is of value if one can be assured that the pulmonary and aortic sounds are being transmitted to the precordial areas with equal intensity. The pulmonary second sound is often split on auscultation. Sometimes an early pulmonary systolic click is heard, occasionally followed by a systolic murmur. A loud diastolic pulmonary murmur may be heard and is probably due to the dilated pulmonic valvular ring. The murmurs of such primary heart disease as mitral stenosis may be found. As cor pulmonale ensues and cardiac output falls, the murmurs may fade or disappear, making the diagnosis difficult.

The symptoms of right heart failure—pretibial edema, enlarged tender liver, ascites, and venous engorgement—will eventually be present. The arterial oxygen content and saturation are normal or slightly low. The carbon dioxide content is normal unless lowered by hyperventilation. Capillary pressure is normal; pulmonary artery pressures are high; pulmonary function tests are normal; and there is slight or no polycythemia.

Roentgenograms reveal predominately right cardiac enlargement. The hilar vascular shadows are very heavy with an accentuation of the pulmonary conus. In primary pulmonary hypertension there is a striking decrease in vascularity of the distal pulmonary fields. In secondary pulmonary hypertension due to massive emboli, the lung fields are oligemic in only one area or one lung. If the patient has secondary pulmonary hypertensive heart disease in failure and absence of the murmurs of mitral valve disease, the evidence of left atrial enlargement on the roentgenogram and perhaps on the electrocardiogram is very helpful in differentiating primary pulmonary heart disease from pulmonary heart disease secondary to mitral stenosis. The electrocardiographic findings in the standard leads are right axis deviation plus T wave inversion in lead 3 and sometimes lead 2. Lead V_1 has a dominant R wave and negative or flat T wave. There are large and usually pointed P waves in leads 2 and/or 3. The P waves are usually large in the right chest leads. Angiography demonstrates enlargement of the pulmonary artery and dilatation of its branches. Phonocardiography confirms the ausculatory findings.

TABLE I—FACTORS INVOLVED IN THE DIFFUSION OF GASES ACROSS A MEMBRANE[2]

$$\left(V = \frac{k\,(P\text{-}P') \times S \times t}{d} \right)$$

V = volume of oxygen that diffuses

P - P′ in mm. Hg. = oxygen tension difference across the alveolar capillary membrane

k = constant dependent upon molecular weight and solubility of oxygen in the membrane

S = the surface

t = the time allowed for equilibration along the membrane between alveolus and capillary

d = the distance between alveolus and hemoglobin molecule

The signs and symptoms peculiar to emphysema heart disease should be mentioned. Hecht[7] describes a clinical triad of arterial desaturation, which is always present, polycythemia, and pulmonary hypertension. The patient will probably present a barrel chest with markedly decreased respiratory excursion. Frequently there is clubbing of the fingers. There are striking changes in respiratory function. The vital capacity and maximum breathing capacity are sharply reduced. Ventilation is increased. The amount of air remaining after a maximum expiration is increased. It is said that emphysema is present when the residual volume exceeds 30 per cent of the total lung capacity. The cardiac output is normal or increased. In patients with chronic lung disease, a screening test or serial testing of the circulation time should be performed, for as these patients begin to develop cor pulmonale the circulation time may be normal or decreased, due to the high output failure. Polycythemia is present. When arterial desaturation falls to 70 to 75 per cent of normal, erythrocytosis occurs. The level of desaturation of arterial blood is approximately the same for the stimulus of erythropoiesis as for heart failure and they frequently occur together. One can safely assume that cor pulmonale exists when erythrocytosis is found in a patient with chronic lung disease. The arterial oxygen saturation is very low with marked widening of the alveolar arterial oxygen gradient. Roentgenograms show the characteristic findings of emphysema with the flattened diaphragm, broad intercostal spaces, horizontal ribs, and changes in the peripheral lung fields. The apex of the heart is lifted as a result of right ventricular hypertrophy. The electrocardiogram commonly demonstrates right bundle branch block, complete or incomplete, or other conduction defects of the right ventricle. There is a deep S wave in all the standard limb leads. The P waves are unusually large but not widened in aVF and leads 2 and 3.

Conclusions

I have discussed an entity which is becoming more common, perhaps as a result of the prolongation of life and better care of patients with chronic pulmonary disease. Cor pulmonale, poorly recognized in the past and inadequately studied, has suddenly received considerable attention because of the ability to evaluate cardiac and pulmonary function simultaneously. It is hoped that this paper has increased both understanding of

pulmonary heart disease and a desire to search further into this interesting subject. As a result one would be of greater help to one's colleagues and patients.

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ANESTHESIA for THYROIDECTOMY*

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CERTAIN FEATURES of anesthesia for thyroidectomy are distinctive because of the nature of the diseases and the operative area involved.

The era of the wild-eyed, unprepared thyrotoxic patient coming to surgery with rapid, bounding pulse and a basal metabolic rate of astronomic value disappeared to a great extent with the development of the antithyroid thiocarbamide drugs in 1943. Excessive premedication is no longer a necessity, and stealing the thyroid is a ritual now relegated to the anesthesia museum.

General anesthesia for thyroidectomy can be induced with any of the inhalation and intravenous agents in common use, though the textbooks still caution against the use of cyclopropane in the toxic patient. It is felt that the thyrotoxic patient is more susceptible to arrhythmia when cyclopropane is used. We are similarly cautioned to avoid using epinephrine with local anesthetic agents in these patients.

The myxedematous patient rarely requires thyroidectomy; however, there is no reason why the occasional patient who does come to surgery cannot be treated until he reaches a euthyroid state. The inadequately prepared myxedematous patient is a poor anesthetic risk because his diminished thyroid function is aggravated by muscle weakness, hypoadrenocorticism, myocardial weakness, cardiomegaly, and coronary sclerosis. Because of his low basal metabolic rate this patient is too easily anesthetized and will show a high susceptibility to narcotics and other sedative drugs.[1]

Conduction anesthesia can be induced by either cervical plexus block or an infiltrative technic, such as Rowbotham's.

Cervical plexus block is achieved in two stages. Block of the superficial branches of the cervical plexus is performed by infiltrating subcutaneously and beneath the deep fascia at the middle of the posterior border of the sternocleidomastoid muscle. This will block the anterior cutaneous nerve of the neck and the medial and intermediate branches of the supraclavicular nerves. If a substernal extension of the thyroid is present, block of the first and second intercostal nerves in the midclavicular line will extend the anesthesia to the structures beneath the skin in this area.

The deep structures of the neck are anesthetized by blocking the second, third, and fourth cervical nerves at the point at which they pass over the transverse processes of the cervical vertebrae. There are many artificial lines and landmarks that can be projected on the skin of the neck to assist in injecting the anesthetic agent in the proper location. The best landmarks are found by applying the fingertips to the neck and palpating the transverse processes of the desired vertebrae.

Skin analgesia is established to include the area from the inferior surface of the mandible, posterior third of the ear, and the occipital region of the skull, over the neck and shoulders to the level of the second rib. The deep and superficial muscles of the neck are profoundly relaxed. If one is careful to avoid vascular and dural injections, the complications from this form of anesthesia are minimal.

Infiltration anesthesia for thyroidectomy has been popular in the past in England. It has the advantage of providing more complete anesthesia than the cervical plexus block in that it anesthetizes certain muscles (platysma, sternohyoid, and sternothyroid) and structures innervated by filaments from the vagus nerve and cervical sympathetics (carotid sinus, trachea, larynx, and esophagus) not affected by cervical plexus block.

The surgeon may object to the distention and distortion of the tissues of the neck that result from infiltration anesthesia. If the patient is not toxic, and epinephrine is used in the local agent, the surgeon will appreciate the diminished number of vessels that require ligature.[1]

The thyroidectomy patient, because of his high metabolic requirements, cannot tolerate any degree of respiratory embarrassment; therefore, the anesthesiologist is obliged to maintain adequate ventilation with a patent airway. The variety of relaxants and anesthetic agents available today make it unnecessary for the patient to undergo thyroidectomy without the safeguard of an endotracheal catheter.

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The endotracheal catheter should be of sufficient strength to counteract the tracheal compression which is too often present—in 19 per cent of patients with toxic diffuse goiter, 49.2 per cent of patients with toxic nodular goiter, and 57.8 per cent of patients with nontoxic nodular goiter.[2] If too soft a catheter is passed into the trachea, it will not be able to withstand the pressure of the gland and will only act to decrease the already-compromised tracheal lumen.

The tracheal catheter will also be essential in performing frequent tracheal aspirations, because of the great amount of mucus secreted in the tracheobronchial tree during this surgical procedure. At the end of the operation, the suction tube should be left in place, extending beyond the tip of the endotracheal catheter as it is withdrawn, in order to remove any mucus that may have collected in the superior portion of the trachea. Suction of the trachea may have to be repeated postoperatively if the patient is unable to expel the mucus by coughing.

Postoperative respiratory obstruction is usually due to laryngeal edema, tracheal compression, and bilateral recurrent laryngeal nerve injury. All hospital personnel should be alert to detect postoperative stridor, and immediate consultation should be called for decision on tracheotomy. Tracheotomy should always be performed to relieve any respiratory obstruction that cannot be corrected in other ways. If both laryngeal nerves are known to be damaged, tracheotomy should be performed at the time of operation.

Occasionally one hears of a case of respiratory obstruction being called tracheal collapse. These cases of so-called tracheal collapse are usually due to recurrent nerve injury, massive edema, or arterial hemorrhage beneath the muscles of the neck.[3,4]

True tracheal collapse is due to tracheomalacia caused by pressure on the trachea by an enlarged gland for a long period. If the tracheal rings are not destroyed, the trachea will always spring back to its original shape and position when the pressure of the gland is removed. However, if the tracheal rings are destroyed, a soft unsupported tube will remain. Sudden collapse of the soft wall will occur with the negative pressure that occurs during normal respiration. During operation, an endotracheal catheter is essential to preclude a fatal outcome, and a tracheotomy is necessary before the endotracheal catheter is removed at the completion of operation. If tracheomalacia exists, tracheal collapse may be prevented by suturing the trachea to the strap muscles of the neck for support. Tracheotomy is required in conjunction with this treatment.[4,5]

In cases in which the tracheal wall is invaded by a malignant tumor, the anesthesiologist may be unaware of the complications that may be lurking beyond his vision as he intubates the patient. The endotracheal catheter may perforate the tracheal wall at a weakened spot or may traumatize the tumor and produce silent hemorrhage with subsequent drowning. It may dislodge a portion of the tumor which can then act as a foreign body in the trachea or in a bronchus.

Tension pneumothorax and mediastinal emphysema, though uncommon, can be rapidly fatal if not recognized in time, or if treated inadequately. There are several causes of these conditions, such as a tear in the apical pleura, or a surgically produced hole in the tracheal wall. Both of these injuries will allow air to escape into the superior mediastinum and the pleural cavity. These injuries are easily detected and should be repaired as soon as they occur.

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The two most common causes of tension pneumothorax and mediastinal emphysema are the sucking of air into the mediastinum along the planes of the middle layer of the deep cervical fascia and rupture of a dilated alveolus, with subsequent passage of air along the vascular sheaths through the root of the lung, into the mediastinum, and into the pleural cavity and the subcutaneous tissues of the neck. These events could follow any attack of labored respiration as may occur with coughing, laryngospasm, excess mucus secretion, or even a kinked endotracheal catheter.

During operation, tension pneumothorax and mediastinal emphysema are not easily detected, and their signs and symptoms may be attributed to other causes. The best diagnostic sign during operation is a marked disparity between the patient's respiratory efforts and the minimal motion of the rebreathing bag. In the postoperative period, as in the operative period, tension pneumothorax and mediastinal emphysema produce severe dyspnea and cyanosis. The rapid breathing is characterized by a relatively long expiratory phase and an exceedingly short inspiratory phase. Since the patient is unable to create a negative intrapleural pressure, he breathes by compressing the lung in a forceful expiratory effort, depending on the sudden recoil of the chest wall to produce a very temporary negative pressure that will permit the ingress of a small quantity of air.

Subcutaneous emphysema of the tissues of the neck is an almost constant diagnostic sign. If air has seeped into the pericardium, there will be a crunching or cracking sound with each heartbeat. Roentgenographic examination will confirm the diagnosis. A lateral chest film in addition to the routine anteroposterior view will be necessary to visualize early mediastinal emphysema.

Treatment is aimed at relieving the increasing mediastinal and pleural pressures. In pneumothorax, an indwelling catheter is inserted into the pleural cavity in the second, third, or fourth interspace in the midclavicular line and is attached to an underwater seal. Catheters are inserted in both sides of the chest if the condition is bilateral. Pressure in the superior mediastinum can be relieved by inserting a drain into the mediastinal space through an incision made at the suprasternal notch.

The use of oxygen under positive pressure is contraindicated as it aggravates the condition.[6,7]

The eyes of the hyperthyroid patient require special attention. Exophthalmos may not permit normal closure of the eyelids, in which case the lids should be sealed with thin strips of a flexible tape and the protruding eyes further covered with a rubber sponge or towel to protect them from the pressure of the face mask and head straps.

The thyroidectomy patient . . . cannot tolerate any degree of respiratory embarrassment

The bifurcation of the common carotid artery is innervated by branches of the glossopharyngeal, vagus, and sympathetic nerves. Reflex activity initiated by operative manipulation in this area results in a sudden, profound bradycardia, hypotension, and cardiac and respiratory irregularities, commonly referred to as the carotid sinus syndrome.

Treatment consists in immediately removing the instruments, placing the patient in Trendelenberg position, and administering oxygen. The area is infiltrated with a local anesthetic agent followed by an intravenous injection of atropine, 1/75 to 1/50 grain, or equivalent doses of scopolamine. This therapy will usually correct the carotid sinus syndrome and is recommended for prophylaxis. An intravenous infusion of procaine, 0.1 per cent to 0.2 per cent, will also prevent the syndrome if it is started early in the operation. Burstein[8] recommends intravenous d-tubocurarine as an agent for blocking the autonomic ganglion in treating this reflex.[7,9]

Thyroid storm or thyroid crisis is an acute failure on the part of the body to adjust to thyrotoxicosis.[10] It may occur during or after thyroidectomy or any other surgical stress. Its onset is acute and it runs a fulminating course. The most dramatic symptom is hyperthermia, which may reach a lethal level within 36 hours. There is a marked tachycardia with occasional development of auricular fibrillation, and widening pulse pressure. Diaphoresis and flushing of the skin are marked, with redness at the elbows and knees. The patient becomes extremely restless and uncontrollable, requiring high doses of narcotics for relief.

If the condition is fatal, the terminal features are delirium, coma, diarrhea, and pulmonary edema. The duration of thyroid storm, from its onset to fatal termination, is 36 to 48 hours. If a patient weathers this critical period, the chances for recovery are good.[11]

The cause of thyroid storm is unknown. Manipulation of the thyroid gland, with consequent release of significant amounts of thyroid hormone into the circulation, has been suggested as a possible etiologic factor. This hypothesis has been propounded to the extent that it was generally felt that a direct relationship existed between the severity of this phenomenon and the postoperative storm.

A recent study[12] designed to test this hypothesis was devised whereby the plasma level of radioactive proteinbound iodine (PBI^{131}) was evaluated before operation, immediately after anesthesia was established, and after operation was completed in a series of thyroidectomy cases. The investigators detected no change in the plasma PBI^{131} concentrations immediately before operation was begun, or immediately after thyroidectomy had been completed, proving that manipulation of the thyroid gland during operation and after induction of anesthesia did not liberate thyroid hormone into the circulation.

Treatment of this condition is directed to many parts of the body. High dosages of antithyroid drugs and iodine are recommended in an attempt to depress the activity of the thyroid gland. ACTH and cortisone are recommended because of a decreased secretion of ACTH and increased rate of steroid utilization seen in clinical hyperthyroidism, in which decreased adrenocortical activity is the rule. Such treatment will also tend to depress the thyroid-stimulating hormone of the pituitary gland.[13]

Other treatment consists of sedatives and narcotics to control restlessness, fluid and electrolyte replacement to offset the loss of these elements in diaphoresis, and refrigeration therapy to control hyperthermia.[11]

Recent reports[14,15] describe the successful treatment of postoperative thyroid storm by hibernation, using chlorpromazine in a modification of Laborit's "lytic cocktail." The chlorpromazine makes the patient poikilothermic by putting the temperature regulating mechanism out of action. Applying ice bags to the skin for surface cooling will control the metabolic rate and body temperature.

Summary

Because of the nature of thyroid diseases and the area involved in their surgical treatment, anesthesia for these patients presents several potential hazards, the most noteworthy being respiratory obstruction. Methods for prevention and treatment of respiratory obstruction from several causes as well as for complications from exophthalmos, carotid sinus syndrome, and thyroid storm have been presented.

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ANESTHESIA

for the urologic patient*

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IN OPENING a discussion on anesthesia for the urologic patient, a brief review of the procedures involved seems justified. It is somewhat difficult to separate the practice of urology as such from treatment of genital problems, particularly in the male patient, since the urologist usually deals with many such problems in his practice; therefore, some of these will also be mentioned here.

The most common operations on the kidney are nephrectomy, nephrolithotomy, and nephropexy. Drainage of a paranephric abscess and nephrostomy are less common. Ureters are opened for stones, resected for small tumors, and anastomosed or transplanted. On the urinary bladder, cystoscopy with or without ureteral catheterization, cystostomy, cystectomy, removal of diverticula and fistulas, suprapubic prostatectomy, transurethral prostatectomy, resection of bladder tumors, and removal of bladder stones are all performed. Plastic repair of hypospadias and other anatomic abnormalities of the urethra and penis, strictures of the urethra, and removal of foreign bodies from the urethra and bladder are part of this list. Probably circumcision, both male and female, and certainly carunclectomy and removal of Skene's glands in the female should be included.

Evaluation of the patient

From the listed procedures, it is easy to conclude that urologic patients requiring anesthesia will come from all age groups: the small boy with the hypospadias and partially descended testicle, the middle-aged man with a stone or tumor of the kidney, the "perpetually 39-year-old" female with the very painful caruncle or paranephritic abscess, and the elderly hypertensive gentleman with a prostatic problem and its attendant urinary tract complications.

The physical states of these patients will vary widely, and this is far more important than their chronologic ages, because the choice of anesthetic will be made upon this basis.

The average young or middle-aged adult patient seems to present the fewest problems to the anesthesiologist, because the physiologic and biochemical margin of safety in these individuals is greater than in those at either extreme of age.

Some of the clinical factors that must be considered, particularly in the aged, aré the following:

1. The response of the cardiovascular system to changes in blood pressure, increased work demands, and fluid loss, together with the usual decrease in blood volume and frequency of disease in the aged, should always be kept in mind.
2. Respiratory limitations and their effect on adequate ventilation play an important role.
3. Fluid, acid-base, and electrolyte balance problems result from reduction in renal function, and overloading the cardiorenal system is an ever-present hazard.
4. Digestive disturbances may have caused anemias, protein and vitamin deficiencies, and emaciation.
5. Poor or disturbed liver detoxification must be remembered in choosing premedication.
6. The usual decline in metabolic rate makes older people more sensitive to central nervous system depressants.
7. Mechanical difficulties arise from skeletal change and deformities when positioning the patient for lumbar puncture and intubation and again in securing a tight-fitting closed system on the edentulous patient.
8. Diminished recuperative powers of the aged make early ambulation especially desirable to help avoid postoperative circulatory and respiratory complications; this should influence selection of anesthesia.

Clinical factors to be considered in the very young are the following:

1. The degree of anatomic and physiologic development of the patient varies, so that effects of the analgesic drugs are not uniform.
2. Children have poor tolerance to blood loss, trauma, and reflex effects of operation.
3. Ventilation is easily disturbed.
4. The size of children creates problems in elimination of dead space in masks, catheters, and other apparatus.
5. There is a greater possibility of psychic trauma from anesthesia and operation in children than in adults.

Complicating diseases in the urologic patient may be much the same as in any other surgical patient. Cardiovascular disease must be taken into account if present in any of its forms: coronary artery disease, myocarditis, valvular disease, cardiac failure, arteriosclerosis, hypertension, hypotension, anemia, or blood dyscrasias. Cerebral vascular lesions, diseases of the central nervous system, metabolic disturbances (particularly diabetes), protein and vitamin deficiencies, liver disease, alcoholism, and drug addiction require careful management. Diseases of the respiratory system which disturb ventilation, such as chronic bronchitis, bronchiectasis, tuberculosis, asthma, or chronic obstructive emphysema, present problems. The urologic patient requiring anesthesia, especially in the older age group, often has kidney disease, such as nephrosis, chronic glomerulonephritis, nephrosclerosis, neoplasms, renal insufficiency, or uremia.

Adriani[1] states:

> Little data are available on the effects of anesthetics upon the diseased kidney. Consequently there is little information which can be used as a guide for the selection of anesthesia in patients with renal disease and dysfunction. In considering the choice of anesthesia for patients with kidney disease the selection must be based upon the physiologic disturbances present as a result of the disease, namely cardiovascular disturbances, particularly alterations in blood pressure, edema, ascites, anemia, and changes in electrolyte concentration.

*Presented at the annual meeting of the American Osteopathic College of Anesthesiology, St. Louis, Missouri, October 30, 1957.

This quotation, I thought, was of especial interest, since so frequently the urologic anesthetic patient has a lower urinary tract problem complicated by disease of the kidneys.

Selection of anesthetic

In selection of the anesthetic, there are certain general principles involved:

1. Adequacy of facilities should be no problem in a well-equipped hospital, but this is a basic consideration for the safety and comfort of the patient.
2. The capability and training of the anesthetist in the use of agents and methods will govern the choice.
3. The operating speed and technics of the surgeon, and his needs as to positioning, draping, and relaxation of the patient, must all be considered.
4. The nature of the operation plays a part, as does the all-important mental attitude and physical status of the patient.

In selection of anesthetic, let us first specifically consider the kidney, on which such procedures as nephrectomy, nephrolithotomy, nephropexy, ureterolithotomy, paranephric abscess, or nephrostomy are necessary. In a young adult with no circulatory disease, a spinal anesthetic is indicated. In older or younger patients, if general anesthesia is indicated, such agents may be used as nitrous oxide, oxygen, and ether; Pentothal sodium, nitrous oxide, and oxygen with curare; cyclopropane and oxygen, with or without curare; ethylene and oxygen with curare; and/or other suitable combinations of these agents. Because of lateral positioning, an endotracheal tube is advisable in these cases. If extensive kidney disease is present, as it often is in patients requiring a nephrostomy, regional anesthesia, supplemented if necessary with very light general anesthesia, may be best.

A light general anesthetic, such as Pentothal sodium, nitrous oxide, and oxygen, or a spinal anesthetic is satisfactory for repair of hypospadias or other anatomic abnormalities of the urethra and penis.

Cystoscopy may be accomplished with a topical urethral anesthetic such as tetracaine or cocaine. Pentothal sodium, nitrous oxide, and oxygen may be used if relaxation of the bladder is unnecessary, or low spinal subarachnoid block if it is.

Transurethral procedures such as prostatectomy or removal of small bladder tumors or stones are probably accomplished most easily by use of low spinal subarachnoid anesthesia, though general anesthesia with Pentothal sodium, nitrous oxide, and oxygen may be used without creating any problem in connection with the electrical current used in these operative procedures.

Trans-sacral and caudal block anesthesia may also be used in transurethral prostatectomy, though distention of the bladder causes some discomfort to the patient.

For suprapubic cystostomy, prostatectomy, and cystectomy, spinal anesthesia carried to the necessary levels is excellent, if there are no contraindications, and is preferred by most urologists. However, cyclopropane, ether, nitrous oxide, Pentothal sodium, and muscle-relaxant combinations may be used if spinal anesthesia is not desirable.

Circumcisions may be done under local or spinal anesthesia in the adult. The procedure in children is best managed under ether or cyclopropane, because of the great ease with which a child is stimulated to reflex laryngospasm and priapism.

Management of emergencies

Occasionally anesthesia is required for a urologic patient in a surgical emergency; for example, the accident case with either ruptured kidney or bladder, the elderly man with acute retention and distention, the postsurgical prostatectomy case with bladder distention from hemorrhage and irrigation fluid, and the child who has forced a foreign body into the urethra.

In management of these cases, as in all procedures, the physician must be ever watchful for signs of shock, meticulous in his evaluation of fluid losses and in replacement, and aware that preanesthetic preparation of the patient is not always optimum. These patients are frequently most apprehensive and uncomfortable, and the alleviation of pain and fear is truly appreciated.

Box 23

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Loafer's Heart

► SOMATIC AND PSYCHIC PHENOMENA are no longer separable. If the degenerative features of "loafer's heart" are, at least in part, initiated by lack of muscular exercise, the psychic implications of the latter must not be left unnoticed. An all-embracing philosophy of both physical and mental take-it-easy-ism deprives human life of most of its higher values and incentives. It leads to unimaginative boredom and breeds addiction to cheap entertainment and to the various commercially available substitutes for mental stability and spiritual creativeness. Such tendencies, combined with the frantic striving for material "success" in a conformist competitive society add frustrations and anxieties whose cortical and hypothalmic mechanisms cannot remain without detrimental effects on the neurovegetative biochemical equilibrium in the cardiovascular system. Excessive fat consumption does the rest, and it was again R. Price who tersely described the ominous fate of Western man by saying: "Once the wheel was invented, the delicatessen store was inevitable."—W. Raab, M.D., *A.M.A. Archives of Internal Medicine*, February 1958.

CASE REPORT: Tolerance of the patient to multiple surgical procedures

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and
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IN SCANNING the literature of the past 10 years we have been unable to find anything specifically concerning tolerance of the patient to multiple surgical procedures. It is good for us, as physicians, to be reminded occasionally of the body's recuperative powers against seemingly insurmountable stress factors.

The following case report is a summary of the multiple surgical procedures performed on one patient during a relatively short period. It is hoped that this example of one patient's tolerance will point the way toward less hesitancy in following all possible avenues of action in treating a difficult or complicated illness.

Case report

A 41-year-old white woman was admitted on March 13, 1957, with a chief complaint of discomfort in the epigastric region and in the upper right quadrant. The symptoms had been present for a number of years but had become worse during the past year. Fried or fatty foods had hastened the onset of epigastric "distress." Associated flatulence with occasional constipation was present, but there was no history of jaundice or acholic stools, nor other positive symptoms related to the chief complaint.

Physical examination revealed a 5 foot 5 inch, 148-pound white woman whose blood pressure was 154/90. There was epigastric and right subcostal tenderness on deep palpation, but there were no other pertinent physical findings at this time. Results of routine laboratory studies were all within normal limits. Intravenous cholangiography revealed cholelithiasis with possible defects of the cystic duct.

On March 15, 1957, a high laparotomy was performed. The gallbladder was filled with multiple small stones and the common duct distended. The operative procedure included cholecystectomy, T-tube choledochostomy, and appendectomy. An operative cholangiogram performed prior to closure of the wound revealed a biliary ductal system of average caliber with no evidence of intraductal defects.

During the first postoperative week the patient had occasional abdominal cramps with nausea and intermittent elevation of temperature. All feedings were withheld on the eighth postoperative day; from then until her discharge on March 29, the patient's course was uncomplicated. The T-tube was removed on March 25, and all sutures on March 28. The patient was discharged on the following day in care of her family physician.

On April 20, 1957, at 5:30 a.m., the patient was readmitted via cabulance, complaining of severe pain in the midepigastric region and upper right quadrant. The patient reported that she had been doing well at home until 2 days prior to admission. At that time she had had onset of her present pain associated with black, tarry stools and hematemesis.

Physical examination revealed generalized abdominal tenderness on deep palpation. The patient's blood pressure was 110/60, her pulse rate 104, and her temperature 99 F. Her weight at this time was 135 pounds. Laboratory studies showed a hemoglobin content of 8 grams per 100 cc. (58 per cent); hematocrit reading, 36 per cent; and prothrombin time, 50 per cent of normal.

The patient was immediately placed on supportive therapy, including blood transfusions and intravenous vitamin K. A Levin nasal tube was passed. Further laboratory studies made on the day of admission showed a 30 per cent retention of dye on Bromsulphalein test; serum bilirubin, 1.9 mg. per 100 cc.; and blood urea nitrogen, 18.2 mg. per 100 cc.

For the first 2 days the patient was tube fed. The prothrombin time was brought to 100 per cent of normal and hemoglobin to 87.6 per cent. Results of electrolyte studies were within normal limits. No active bleeding was noted, and the patient's abdominal pain subsided.

On the fourth and fifth days after admission, the patient had spiked temperatures of 102.4 F. and 103.4 F. Again tenderness was present in the upper right quadrant. Muscle guarding was also noted. Roentgenographic studies at this time revealed probable gastric ulcer at the middle of the lesser curvature, and there was a minimal increase in size of hepatic shadows as compared with studies made on the first admission. Significant liver function studies showed alkaline phosphatase, 15.4 units, and 19 per cent retention of dye on the Bromsulphalein test.

On April 27, 1957, because of the temperature elevation, persistence of severe pain, and upper right quadrant muscle guarding, a high laparotomy was performed on provisional diagnosis of subhepatic abscess. The liver was found to be slightly enlarged, boggy, and pale. A pinhead perforation oozing free fluid was noted in the first portion of the duodenum. The area was repaired with several interrupted linen sutures, and a portion of omentum was tacked over the site. Two 1-inch Penrose drains were brought to the skin surface through a satellite right lumbar incision.

Postoperatively the temperature remained elevated, and on the third postoperative day there was considerable biliary-type drainage. It became so profuse by May 5 that the Penrose drain was replaced with a fluted rubber tubing attached to a continuous Wangensteen suction apparatus. In this way more accurate determination of fluid loss could be made. By May 11 the patient's temperature had returned to normal and her over-all condition was considered satisfactory.

At 2:30 a.m. on May 12 the intern was called to

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see the patient, who had suddenly vomited 200 cc. of bloody material. Questioning disclosed that the patient had had epigastric pain throughout the day and had passed a tarry stool that evening. Immediate blood studies showed a hemoglobin of 9 grams per 100 cc. (65.7 per cent), and a hematocrit reading of 30 per cent.

A Levin tube was inserted and blood transfusions were given. No further bleeding was noted, and by May 14, under conservative therapy, the patient's temperature, pulse, and respirations were normal, the hemoglobin was 12.5 grams per 100 cc. (91 per cent), and the hematocrit reading was 43 per cent. The patient's clinical course remained good for the next 6 days.

On May 20, 1957, at 4:15 a.m., the patient had another attack of severe abdominal pain and vomited approximately 250 cc. of coffee-brown material. She was taken to the operating room shortly thereafter, and another high laparotomy was performed. A fistulous tract leading from the duodenum to the right lumbar area was found and completely excised. A gastrotomy revealed hemorrhagic gastritis. Therefore, a subtotal gastrectomy with gastrojejunostomy was performed.

The patient did well postoperatively until the fifth day when she vomited small blood clots. Her hemoglobin dropped from 91 per cent to 8 grams per 100 cc. (58 per cent), and her hematocrit reading was 29 per cent. Hematemesis and tarry stools were noted for the following 3 days, and the patient received repeated blood transfusions.

Her temperature fluctuated from 98.6 F. to 102.6 F. during this 2-week postoperative period. Roentgenograms revealed excellent function of the stoma at the gastroenterostomy site with probable dilatation of several loops of proximal ileum. There was no other evidence of gross pathologic conditions of the small bowel.

From June 8 to 21 the patient's temperature constantly remained above 100 F. with spiking elevations to 103 F. and 104 F. The leukocyte count was 20,500 with a shift to the left; hemoglobin, 9.75 grams per 100 cc. (71 per cent); and hematocrit reading, 35 per cent. During this period various consultants examined the patient. Provisional diagnoses included: (1) acute cholangitis, (2) subhepatic abscess, and (3) generalized septicemia. Agglutination series run during this febrile period were negative, blood cultures were sterile, and results of kidney and liver function tests were within normal limits until June 18.

At that time the alkaline phosphatase was 14.2 units; thymol turbidity, 3 units; and leukocytes, 8,600. On June 20 the leukocyte count was 16,800; Bromsulphalein, 5 per cent retention; and prothrombin time, 60 per cent of normal. Roentgenographic studies of the chest were grossly negative for pulmonary or cardiac disease; abdominal survey revealed hepatic enlargement and soft tissue densities in the upper quadrant, highly suggestive of masses. Report from liver biopsy was negative for inflammatory disease or tumor.

During this period the patient was receiving supportive therapy, including daily transfusions, intravenous fluids, and various antibiotics by different routes. The electrolyte balance was maintained within normal limits. On June 21, after all antibiotics were discontinued, the patient's temperature appeared to subside. At this time she was receiving liquid oral feedings.

On June 22, 1957, at 9:30 a.m., the patient vomited 500 cc. of bright red blood. Three hours later she vomited approximately 150 cc. of bright red material. After further consultation, an operation was performed at 2:30 p.m. of that day. The liver was found to be enlarged and to contain several small focal abscesses in the lower right lobe. The stomach was opened, and the anastomotic site was examined and found to be intact with no bleeding surfaces. Because there were clots in the stomach and small intestine, the duodenum was opened. A 4 cc. polypoid mass with an oozing raw surface was seen protruding from the duodenal stump. It was removed and all bleeding controlled.

The patient tolerated the operation satisfactorily, and for 1 week her temperature remained at 100 F. to 101 F. with occasional elevations to 103 F. and 104 F. There was a copious flow of biliary matter through the abdominal drain, and occasionally the patient vomited bilious material. Foley catheters attached to suction were used at times to facilitate biliary drainage, fluid loss being replaced intravenously. There was no further evidence of gastrointestinal bleeding.

On July 3 the patient weighed 102 pounds, and she lost 20 more pounds during the next 3 weeks. Beginning on July 21 her appetite as well as her general status appeared to improve. There were still two fistulous tracts draining through the abdominal wall, but by August 1 the drainage was diminishing.

By August 12 one tract had stopped draining, and by August 18 no drainage was noted from either tract. At this time the patient was ambulatory; her appetite was good; and her temperature, pulse, and respirations were within normal limits. She now weighed 90 pounds. Her condition continued to be very good for the next 3 days.

On August 21, 1957, the patient was discharged ambulatory in care of her family physician.

Comment

No definite conclusions about tolerance of patients to multiple surgical procedures can be drawn from one case.

Paucity of literature on this topic indicates a need for further investigation, particularly concerning: (1) psychologic status of patients; (2) adrenal hormonal functions; and (3) temperature elevations in relation to antibiotic therapy.

The significance of fluid balance and electrolyte studies cannot be overemphasized. Use of suction apparatus for profuse abdominal drainage is a considerable aid in estimating proper fluid replacement.

The body's own recuperative powers must constantly be kept in mind.

Summary

Very little has been written concerning tolerance of the patient to multiple surgical procedures. A case has been presented of a 41-year-old white woman who successfully underwent four major operative procedures in a 4-month period: cholecystectomy with T-tube choledochostomy and appendectomy; repair of perforated portion of duodenum; excision of intestinal fistula, subtotal gastrectomy, and gastrojejunostomy; and high laparotomy with removal of a polyp from the duodenal stump.

During the patient's 136 days of hospitalization, she ran a temperature of 100 F. or above for 82 days; received 31 units of blood; and lost weight from 148 to 82 pounds. Now, 5 months following discharge, the patient is in good health and weighs 110 pounds. Findings from follow-up laboratory studies have remained within normal limits.

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Executive Secretary TRUE B. EVELETH, D.O.
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Editorials

THE JOURNAL *welcomes to its editorial pages for the first time the present Executive Secretary of the Association, writing the guest editorial for the month. Although the invitation is a standing one, readers may be sure that any statement made under this by-line will appear only when its writer considers the matter for discussion one of paramount importance to the profession. The situation described by Dr. Eveleth is one recurring in various guises and in differing areas. It is typical of those in which the cooperation of A.O.A. members is sought. There can be no effective action in these cases without a totally coordinated effort. Your comments are invited on the policy outlined.*

We Will Follow Through

TRUE B. EVELETH, D.O.

A well-known, mass-circulated, weekly newsmagazine recently reported activities of a physician that were properly judged unethical. In the course of the news item, reference was made to an osteopathic hospital that had denied this physician guest staff privileges. The wording was such as to imply to some readers that osteopathic hospitals are generally substandard because the physician in question could not qualify for acceptance "even by an osteopathic hospital."

The magazine's editors were asked for a forthright interpretation of their statement. Their reply was gracious and satisfactory. The rewrite editors had passed the statement of the reporter on the basis that this physician had been denied admission "even" to an independent hospital, whose staff was in no way involved in the controversy. This exclusion left the censured doctor no place in that city in which he might practice.

In years past invidious references to osteopathy in newspaper and magazine articles were not infrequent. Such references are rare today; only very occasionally is there an obvious intent by the author to misrepresent and demean this profession. More often, however, there are references to osteopathy to be found in a newspaper, occasionally in a magazine, and less often in a book, that are entirely contrary to fact. Naturally and rightly, members of our profession become angry at such misstatements. They are inclined to write directly to the individual or individuals they believe to be responsible.

Our readers assume that statements are deliberate. Therein lies danger. There may have been no intent upon the part of the writer to misrepresent osteopathy. He may have been misinformed, or simply uninformed. He may not have been an authentic person; he may have lacked adequate sources of information. As a profession we have made no great effort to tell our story and still do not.

There is no publication that does not occasionally make an error about which its editors are regretful. Our publications do, and our editors admit it frankly. All editors appreciate having errors called to their attention, and likewise they appreciate the chance to explain the error.

Several years ago a newspaper of national circulation carried a headline in which osteopathy was put in an unfavorable light. One of our D.O.s addressed a scorching letter to the president of the major wire service that carried the story. Whereupon we were advised directly that no wire service ever writes a headline. The wrong man had been charged with a "crime" that he had not committed. Through friends in high places our face was saved. But our ignorance spoke for itself—too loudly.

We agree completely that every A.O.A. member should protest whenever he runs across an inaccurate, unfair, or apparently insulting reference to osteopathy. But we ask you to address your protest to the Association. A letter from us would be much more effective, not because we can make a better case than you can, but because we can speak as the authoritative representative of more than 13 thousand physicians. In fact, we depend upon you, the reader, to inform us of adverse references to our profession. We can easily miss them. This is our method. We locate *the responsible person* (rarely the author) and write him a carefully prepared letter. Often this person is the publisher. We send a covering copy to the author, if he is known.

After all, he has the right to defend his position with his publisher. You would be reassured to know how often our statements of grievance are received with courtesy and regret. Exchange of correspondence usually proves satisfactory, and publisher and author emerge from the encounter better informed about osteopathy.

We do not air these incidents in our publications. We have no desire to offend innocent people. If we were to drag these incidents out in the open we would merely be countering insult with injury. If we were to publish the apologies and regrets we receive, our respondents would hesitate to express themselves as frankly as they usually do.

We beg you, therefore, to permit us to study all these matters at the national level before any of us take action. We will tell you exactly how we have faced up to the matter about which you are concerned. When you see "red" over a misrepresentation, whether it has grown out of a lack of information or has developed from pure prejudice, we agree that a sharp reaction is wholesome. When you write us you need not censor your language. We know exactly how you feel. We have felt that way ourselves and still do at times. But by the time we get your letter, all of us will have had the chance to cool off. Thereupon we will follow through, even to filling you out on the story's ending. Give us the chance to prove to you that we will follow through.

The Osteopathic Situation and Effective Communication

The impossible has happened—in Kansas. After 20 years of bitter struggle between the state's doctors of medicine and doctors of osteopathy, there is complete cooperation between physicians and surgeons, M.D., and physicians and surgeons, D.O. And to what end? The president of the Kansas State Medical Society, Barrett A. Nelson, M.D., in a statement made to his own members, properly expressed the objectives for each professional group: "that each practicing physician will in all cases consider the best interests of [his] patients. . . ."

After so many years of feuding, how was such rapport achieved? The analysis is simple, granted certain secondary factors—the individuals concerned acted like mature human beings, considerate, understanding and able to take a new look at an old problem. Without the one essential factor, however, no answer can ever be obtained anywhere to the problem of good relations between osteopathy and medicine. The essential factor? Effective communication. Without it—effective communication—nothing can be accomplished, even by men of good will.

From the vantage of Kansas, one can look out upon the nation. In many areas, good relations between organized medicine and organized osteopathy have apparently reached a stalemate. Important? Perhaps not, unless "the best interest of the patients" of respective groups of practitioners is deemed important. There are a number of states other than Kansas where a genuine *rapprochement* has got well under way. How? Again, through effective communication. There are other states where a kind of armed truce exists at the expense of their citizens' best interests. A few states segregate osteopathy legislatively, and classify the profession with the limited healing art groups.

The achievement of good relations between medicine and osteopathy is an interesting social study. Viewed from the standpoint of meeting the health needs of the nation, it becomes a vital problem. Seen in its entire relationship, however, the problem is no longer merely interprofessional, but one for society as a whole—the osteopathic situation seen within the context of the human situation. Effective communication between society and the osteopathic movement in medicine has yet to be achieved. The record speaks for itself.

Admittedly, osteopathy has become thoroughly institutionalized. It is a mature body socially; yet after 60 years, the profession is scarcely known. Perhaps it is pertinent to ask why. Is it a matter of the words we have used? Within the knowledge of this observer, our language has not varied in 35 years. In that span, society should have understood our jargon. Have our special words and phrases had the effect of segregating osteopathy? It would seem that our way of telling the osteopathic story has come to a dead end. This loss of meaning, if there were meaning in our profession's phraseology, is not an unusual happening. Within a decade, one of the period's most telling phrases, the "Cold War," is rapidly becoming out-of-date, not that the war is over but that it seems to have reached a dead end. "Cold War" no longer describes the situation. Much less can an answer to the problems of the osteopathic situation today be formulated in terms of 35 years ago and be made intelligible. They remain meaningful only to those who persist in hugging these phrases to themselves.

Can an effective language be formulated to explain the osteopathic situation? Only if the human and the osteopathic situation are properly related. And therein lies the rub. Facts must be faced. Several decades ago an English writer pointed out that the people who lived during the fall of Rome did not even know that Rome was falling. One of today's columnists asks: had they known, would they have acted differently? He suggests not and points to the fact that we have every reason to believe that cigarettes are perilous, but most of us keep on smoking.

Any attempt to get a message across to society about osteopathy requires us to examine the total situation. We must be willing to take the time and make the effort to take stock of the osteopathic movement as it is related to society. That is difficult. The osteopathic physician, quite naturally, is busy about things that concern him directly—practice, hospitals, the family, monthly bills, the weather. Nevertheless, THE JOURNAL now attempts to examine the osteopathic situation in relation to the human situation, in the convic-

tion that a sizable number of doctors of osteopathy will be willing themselves to make such an examination if facts are submitted upon which to base a stock-taking.

I

The osteopathic situation, like the human situation, is a matter over which there is considerable discussion. Certainly, the status of osteopathy is being talked about within the profession, and to the degree that it is known, outside it.

It is true that osteopathic influence horizontally—as seen across the map—is narrow and spotty. Vertical soundings, however, show that osteopathic influence has reached down into areas where doctors of osteopathy assume their proportionate share of health care—working in private nonprofit hospitals of 50 to 400 beds, institutions that are built jointly by the profession and the community and are community-supported. In height, osteopathic recognitions are not questioned by the Congress of the United States. Governmental health agencies under the leadership of the Public Health Service cooperate whole-heartedly with the profession in its program of medical education, research, and health care. The President's Committee on the Health Needs of the Nation, after a year-long study, concluded that any evaluation of the nation's ability to meet its health needs must take into account the services of the osteopathic profession.

The populous states, without exception, through legislative action in the founding days of the profession or later by the passage of new laws or the amendment of antiquated medical practice acts, have established the practice of osteopathy to be the practice of medicine. Its practitioners are acknowledged doctors of medicine, i.e., physicians and surgeons in no way divorced from the fundamental facts of medicine. The profession's six medical schools under osteopathic auspices furnish a relatively small but sorely needed number of physicians to the nation.

Narrowly focalized, it is apparent that osteopathy is one of the two healing art professions in the United States that provide a complete health service to its people (osteopathic care has been roughly estimated at 9 million of the nation's total population of 170 million). It would seem that for the first time in its history, the profession, its colleges, its hospitals, and its services are approaching integration into a totality that one of the nation's keenest scholar's recently termed "The American Civilization." Sociologists are beginning to note that the osteopathic profession is losing what they have termed its "marginal role." They grant that osteopathic physicians are becoming socially, scientifically, professionally, and politically acceptable to society. There remain those occasional doctors of osteopathy who show sociological symptoms of marginal strain, best evidenced by their inability to face up to reality (facts about osteopathic status today) and arrogate to themselves a special kind of knowledge to which they alone have access. This comfortable self-segregation requires no break with past beliefs.

Thus visualized, it would appear that the osteopathic situation today is not in need of further formulation, delineation, or explanation. If we know how we got here and where we are, what more do we need to know? If we accept a summary answer as sufficient, as do many members of our profession, no further examination is indicated—except that osteopathy is left groping.

II

A close friend and long-time scholarly observer of the osteopathic movement remarked recently that osteopathy had come into its "time of troubles." So Toynbeean an analysis by a judicious person should sound a note of disturbing anxiety, even to the complacent and self-satisfied. Our complacency, however, is akin to that of doctors of medicine; in fact, it is in accord with all favored sections of our economy—Americans have never had it so good! And yet our observer's judgment is one that the world's prophetic critics are fastening upon the human situation in its every part, from self-righteous and self-worshiping nations to their bemused citizenry.

For the first time in history, an entire earth, geographically, socially, and politically is in its time of troubles. Is this profession exempt because of its smallness? Or that of medicine, because of its vastness? A planet's life and thought are being reshuffled, its inhabitants beset by change and conflict of which so few have adequate knowledge. At least, warned as we are on every hand, we should be intelligent enough to attempt to take stock as a profession—where we may be going. This question would round up the trilogy of questions facing every social group; where they are, how they got here, and where they may be going. There are few groups today that are not asking themselves these questions, in an attempt to formulate ideology (to explain the ideology of any movement is to define its intellectual pattern, its theories and aims, and its scientifico-socio-political program). These questions constitute a challenge put by society. Are we preparing to answer them, not only for ourselves, but for society?

How can we best take stock of osteopathy today, to find where we may be going? What does an examination of the osteopathic situation reveal? An editorial article, entitled "The Road Ahead for Osteopathy," was published in the November 1955 FORUM. To a moderate degree, the article accomplished its purpose—it did provoke a response: to approve, to disapprove, or more often, to disregard. One of the article's astute and knowing analysts said recently that its author had described all the approaches to the road but had failed to point out the road! It seems probable that the time has come to survey the road, determine its direction, mark out its boundaries, and raise its blockades.

There is no answer as to where we may be going unless we are able to hitch onto where we now are—to put it in the latest jargon, osteopathy has come to a time when it must "orbit" itself. It has been lost much too long in its own etherealizations.

Osteopathy chained its own hand to the plow decades ago when its leaders in state after state claimed in effect what is now fact—that doctors of osteopathy are fully prepared physicians and surgeons in no way divorced from the fundamental facts of medicine. Each time a state concurs in the profession's historic position

by repeal of an antiquated medical practice act, through enactment, amendment, or court decision, osteopathy reforges its own chains. If chains they be. He who quarrels with his profession's position or is faint and fearful because of it, has already fallen into his own furrow.

What exists for osteopathy is an obligation. It can be stated in terms that are sharply definitive; the osteopathic movement in medicine is bound—and that word is used within the severity of its literal meaning —to furnish society with physicians. The debt comes due at a time of doctor shortage, when the costs of medical education are soaring. Yet, the profession finds that it must now accept the responsibilities which it sought to possess, and thus far has made a successful case for its right to hold. The full implications of this aspect of the osteopathic situation were set forth in an editorial published in the August 1957 JOURNAL, entitled "The Vanishing D.O." The frame within which the statement was constructed grows firmer by the month: that this profession dares not attempt to escape its obligations as a critical shortage in physician care looms before the people of the Nation.

III

There can be no compromise with medical education under osteopathic auspices, in quality, in breadth, or in its product. Likewise, if osteopathy is to continue as a living movement in medicine it can not rest satisfied with aping modern medical education, conceded by its own critics to fall short of embracing all that is pertinent to the comprehension, prevention, diagnosis, cure, and control of disease. Much less may osteopathy wrap itself in the threadbare mantle of its own making, woven during days of armchair reasoning.

There are those who would archaize present-day osteopathic education in an attempt to alter its pattern into one that they assume prevailed during its early decades. On the other hand there are those who would modernize the osteopathic education of founding years. They would dip their buckets down into the well of the past to bring up the thinking of an original and intuitive mind, highly empirical and immensely practical, and turn its thinking upon itself, to render today's education sterile and turn a road into a blind alley.

Criticism of doctors who are unable to interpret the challenges to osteopathy in today's terms does not imply interference with the theories and practices of any individual doctor by organized osteopathy so long as he conforms to ethical standards, and practices within his legal rights. These individuals, however, should be sharply halted if, through pressure, they attempt to press aberrant practices upon their national body. There is room in osteopathy, as there was from the beginning, for scientific doubt and for the scientifically verifiable. That means there is room for search and exploration but not for organized ignorance. The osteopathic situation today, if it is to be made understandable, must be able to withstand scientific scrutiny from every angle.

Despite the reactionary social position and policy of organized medicine and its often unreasonable exercise of authority, the fact remains that its dominance of individual doctors, its control of dissident groups, and its determining voice in medical education have transformed the standards of American medical practice into the highest in the world.

A unified profession purchased at the cost of group appeasement is a high price to pay if standards are endangered. Enthusiasts are tireless fighters and are rarely willing to wait for the winnowing of time to establish validity. They attract to their ranks the uninformed, the credulous, the naive, and more often, the merely stupid. Eventually, the purely venal follow in the train of the enthusiasts to seize the take.

Claims are always being made that some particular form of therapy is "osteopathic," as if that word had the power to conjure. A new batch of unethical and substandard drug houses prey on every new generation of physicians. These firms are the hucksters of medicine, who today lure the uncritical through the language of pseudo-science. All progress in medicine is cradled in doubt. Therein osteopathy had its birth. And yet many physicians are as lambs in the grasp of the foxes and wolves. The Abrams, the Kochs, and the Hoxseys, and the reborn charlatan, plus the drug hucksters, arise inside and outside of every new generation of healing art practitioners, whether medical or osteopathic. The osteopathic movement today, if it is to gain the confidence of society, must develop physicians with a high degree of suspicion. We are no longer in a position to "explain"—we are being examined!

IV

We come again to an obligation that we cannot escape. Its acknowledgment must be sharp and clear-cut, without one word of hedging. This profession is made up of physicians and its responsibility is to continue to produce them.

A statement of where we may be going must contain an identification of ourselves to mark out our goals and identify them. Within the last year it has been said by different people in varying form that the issue facing the profession is how best "to work toward a solution of the problems of osteopathic medicine today as they arise within a total frame that is medicine." The situation is a relational one. Osteopathy's connections with past and the future are organic. We have identified ourselves verbally by terms and definitions that have become distinct entities that exist for their own sake, and that bear no coordinated and connected relationship to anything except our profession.

In the past we were forced to use a special language, although we were doing no more than engaging ourselves in the study of disease and its treatment. The fundamental approach to the study of disease has changed little since the Greeks, the founders of medicine. It remains primarily conceptual in character. A recent essayist has traced back to their historical origin fourteen conceptions of disease, beginning and ending, succeeding one another, overlapping, living side by side, serving constantly to alter medical practice for the past 2,000 years. Conceptual medical thinking, initiated by the creative minority that keeps any discipline alive, is more acutely active than at any time since the origin and phenomenal development of German speci-

fist medicine of the last quarter of the nineteenth century. This newer thinking will slowly and inexorably reorient medical practice.

Some medical concepts are universal in character. Such is the administration of drugs to cure diseases. Their first usage was empirical and, surprisingly, in part still is. However, drug therapy in the last fifty years has become more and more scientifically based. Drug administration has evolved into modern pharmacology, representing a universal concept scientifically applied to the diagnosis and treatment of diseases.

Osteopathy had its origin in another universal concept, that of physical medicine as fundamental to the diagnosis and treatment of disease. As with pharmacology, physical medicine (not as a specialty but as conceptual thinking) cuts across the entire field of medicine. As a complete healing art agency, the emphasis of the osteopathic profession has never been placed upon *one healing principle or the concept*—call it osteopathy, physical medicine, kinesiology, or what you will. For sixty years, the profession has recognized, and continues to recognize, that the musculoskeletal system is as vital to the body as are any of the other systems, interacting reciprocally with them, influencing their functioning and being influenced by it. Maladjustments, aberrations, abnormalities demand skilled medical care if they are not to affect in a noxious manner, not only other body systems but under certain circumstances, man's whole animal body. For an equal period of time, the osteopathic profession has successfully employed a form of physical medicine in the treatment of maladjusted musculoskeletal systems—manipulative treatment.

It does not seem unreasonable for this profession to claim that after 60 years of successful experience in the diagnosis and treatment of diseases that there are insights in osteopathic medicine and strengths in organized osteopathy to support those insights that are not to be found elsewhere. There is no implication here that osteopathy would arrogate, appropriate, or usurp medical knowledge to itself. It believes that medical education under osteopathic auspices should be given the continuing opportunity to train student-physicians and thereby to demonstrate and test its approach to medical care. There are thoughtful medical leaders today calling for the revitalization of the whole of medicine. The osteopathic movement in medicine has something to contribute to medicine's revitalization. In that, osteopathy moves closest to its original purpose.

The profession at times has spoken somewhat pretentiously of its "contribution" to medicine. Its claims have been made to no effect. Can it be that these claims are totally invalid? Or may nonrecognition be due in part to the profession's ineffective communication? Regardless of its lack of social recognition, there are authentic persons who believe that the osteopathic profession does have a contribution to make to medicine. And there are those who have suggested that its contribution can be defined in terms simple enough to be understood by any literate person: *theory*, the role of musculoskeletal system and its abnormalities in human health and disease; and *practice*, structural diagnosis and manipulative treatment.

V

An analysis of the osteopathic situation and a statement about it present no hard problem once we express it in ordinary language. If we identify ourselves to ourselves, mark out our own goals, and justify them within the language experience of informed and literate groups, medical or nonmedical, we have said where we are attempting to go. Thereby we shall make our major purpose understandable to society as a whole. It is that simple. Admittedly, herein there is no talk of "distinctiveness," "separateness," "independence." No "party" for "party's" sake. No implication of a "steal." It is true that such thinking suggests the eventual infusion of the osteopathic viewpoint into the great body of medicine. When this happens, the osteopathic movement in medicine will have fulfilled its destiny. It scarcely seems necessary to state unequivocally that the desegregation of osteopathy is not related to what has been called its "absorption," "liquidation," and "amalgamation" by or with organized medicine. It is a *non sequitur*. But that is contrary to our usual thinking and we find ourselves annoyed by a long view that obliterates our cherished beliefs. Nothing is so painful as to unmake a made-up mind; nothing dies so hard as the mind made up.

A by-product is inevitable to this broader identification of ourselves. It is a by-product that could transcend itself to become the primary product. The moment that we stop confusing ourselves as a profession, no longer will we confuse our student-physicians. They will come to see themselves not only as physicians in the proper and general sense of the word, but also as exponents and conservators of physical medicine exemplified *as a universal concept within osteopathy*.

They will be challenged by opportunities to develop and contribute—opportunities not present in the profession of medicine. They will grasp the fact that as physical medicine is established on a firm scientific basis, the healing art professions will get closer to an effective management of the problems of chronic invalidism. They will discover new factors in disease prevention, higher levels of wellness for the "healthy." These younger physicians will see that there are insights in osteopathic medicine and strengths in its organized profession not to be found elsewhere. They will find themselves challenged to expand these insights and to become skilled in the technics that grow out of them. Therein these student-physicians will understand that the profession of osteopathy exists not for its own sake but for the added service it can render to the maintenance of health and to the recovery from disease.

The osteopathic situation today as a whole is a complexus of problems. The greater number of these problems, however, are identical with those that face the medical situation. Apart from these, osteopathic complexities in themselves are not numerous. Where we may go in the future as a profession will depend upon our ability to tie on to what is—and that, a German statesman said years ago, is the way history is made. The osteopathic movement in medicine must advance from where it now is. Or it will not advance. As it progresses in this wise, the road ahead will open up. But only then.

Notes and COMMENTS

"A Code of Cooperation"

COLUMBUS, Ohio, has set a new pace for the nation in reaching an agreement on how medical news should be reported. The city's medical profession and its osteopathic profession and their hospitals have joined with local newspapers and radio and television stations to create "A Code of Cooperation." An attractive 11-page booklet sets forth the general agreements that are to be mutually binding upon the professions and the communications agencies.

Such an agreement will better serve to bring matters of general interest to the public quickly and correctly. It will help to insure a high standard of professional reporting, and to protect the public against irresponsible persons pushing to capitalize on publicity.

The booklet tells physicians, hospitals, and the agencies how best to cooperate. It cites types of cases that are matters of public record and tells how they should be treated in the news. The agreement guarantees to news media freedom of information and gives assurance of news that is "fit to print" or to broadcast or televise.

Although the Code is specific and concrete in its directives, it recognizes human fallibility. Provisions have been made for a Grievance Committee, to be composed of representatives of every group concerned. It is to meet at least once each six months to hear and to deal with complaints. The executive director of the Columbus Hospital Federation will be its secretary. Special meetings may be called upon the written request of any one of the groups or persons involved.

"A Code of Cooperation" was developed by representatives of the press, radio, and television, and of hospitals and the healing art professions of Franklin County. It is under the sponsorship of the Columbus Academy of Medicine, the Columbus District Academy of Osteopathic Medicine and the Columbus Hospital Association. Thirteen hospitals have entered into the agreement; the press is represented by the *Columbus Citizen, Columbus Dispatch,* and the *Ohio State Journal;* radio and television outlets number six and four respectively. All are well known in the Ohio area.

This coming together is the kind of forward-looking step that suggests the future. The move will doubtless be watched with great interest throughout the country. The greatest benefit will accrue to the public who will turn with increasing confidence to all types of communication.

Osteopathic leaders interested in the Columbus project should write to the Ohio Osteopathic Association, attention W. S. Konold, 53 W. Third Avenue, Columbus, for a copy of "A Code of Cooperation." Not many cities in the United States may be induced to take so advanced a stand, but even a reading of the booklet offers an inspiring study in mutual trust and social harmony. Columbus merits commendation for this advanced step in the public interest.

Understand and support

AS ONE OF THE 140 educational organizations and more than one thousand educational institutions that hold membership in The American Council on Education, the American Osteopathic Association strongly endorses the Council's statement made in late January, 1958, on "Public Understanding and Support for Education." In a five-page document, A.C.E. develops eight propositions that need the widest possible public understanding. Succinctly written, these statements should be brought to the attention of community groups everywhere, if every responsible citizen is to be brought to appreciate the fact that the survival and well-being of the nation depend no less upon the strength of our educational system than upon the strength of our military establishment. A way must be found to induce the American people to place a higher value upon intellectual achievement and uphold higher levels of educational performance.

Along with the propositions that need public understanding are five that also need public support. The Council is prepared to furnish the documents in reasonable number without charge to groups willing to assist in their promulgation. Osteopathic physicians in positions of community leadership can be helpful in getting this statement of propositions into hands that will insure its wide circulation. Copies for such purpose can be secured directly from the American Council on Education, 1785 Massachusetts Avenue, Washington 6, D.C.

Space forbids full reproduction of the statement. Your special attention is called, however, to proposition 4 that relates to public understanding.

4. Lip service to the value of education is not enough. The critical need is for material support. The American people can afford to spend more on education. Doing this, however, will necessitate assigning a much higher priority to the importance of teaching and research as crucial forms of enterprise in a dynamic society. There must be a willingness to practice self-denial in paying higher taxes and in making heavier voluntary contributions to provide greater material support for education.

Among those propositions that need public support, number 5 is especially significant:

5. Totalitarian methods are not necessary to counter the threats of a totalitarian power. These threats can be countered and overcome by our own American strengths, strengths which in education include academic freedom for teachers, scholars, and scientists; freedom of mobility and choice of programs of study and vocations by college students; diversity of programs, form of control, and philosophies among institutions. These qualities of American education must receive continuous, vigilant support.

The document is signed by the thirteen members of the Problems and Policies Committee of A.C.E. that framed the statement. All are well-known leaders in education. Its conclusion is a sharp call to duty: "The actions called for cannot be postponed. The priorities must be established immediately. Should we fail to do these things, the deferred costs will be too staggering to be met in time. If the nation is to survive and prosper, we must start making the basic provisions now."

Children are patients

WAITING room reading material in doctors' offices has long been a moth-eaten joke. For younger patients it is a disgrace. It is a simple matter to provide for adults, and many doctors do so today through subscriptions to better-known magazines. Few doctors can know of children's magazines because there are few. This note is to call attention to *Highlights for Children,* a monthly magazine with the subtitle, "Fun with a Purpose." Its editorial advisory board is made up of representative educators, psychologists, teachers, social workers, and clergy from the three faiths of America. Its acceptance and rating could not be higher. *Highlights* is appealing to parents as well as to their children. Providing the magazine for your waiting room, or for the hospital waiting room, would in itself be evidence of an intelligent consideration of patients' needs beyond that of a prescription or a treatment of any kind. Write *Highlights for Children,* 37 E. Long Street, Columbus 15, Ohio, for a prospectus and a sample copy.

Closing the gap

THE PHYSICIAN's interest in industrial medicine, if it is genuine and true to his traditions, will center around the quality and availability of medical care. In answer to the question, Just what is meant by quality? Dr. Herbert Abrams, medical director of Union Health Service, Incorporated, had this to say:

Quality of medical care is a complex problem which must be solved on several levels. Quality of medical care means the full application of scientific resources to individual persons—to prevent and cure illness, to rehabilitate, to prolong life. Quality also implies a personal interest on the part of medical people in the patient as a person. . . . In the final analysis quality of care must be translated into the everyday relationship between the individual patient and his physician, dentist and other professional persons in the health field. . . . The great strides in scientific knowledge and the increasing complexity and cost of medical care, not only increase the possibilities of medicine for better health. but are compelling us to seek new forms of medical practice in which high quality personal health care at reasonable costs can be achieved. *The essence of medical care is the closing of the gap between the potentialities of science and the application of this knowledge.* [Italics supplied.]

The doctor in court

THE RECENT biennial congress of the International College of Surgeons held in Los Angeles made headlines coast to coast because of the vehement attack on attorneys who handle malpractice suits against physicians. Dr. Emil Seletz, chief of neurosurgery at Cedars of Lebanon Hospital, Los Angeles, and a faculty member of the University of Southern California Medical School, said he spoke on the basis of his twenty years' experience on the witness stand as an "expert" in the hands of lawyers—"their sole purpose . . . to aid in the holdup and run with the loot."

The I.C.S., a small group founded in 1935 and based on a distinctly different policy than that of the American College of Surgeons (1915), is now reported by the *New York Times* to have a membership of 12,000, with about half its membership in the United States. Some 3,000 participated in the 1958 Los Angeles meeting.

The *Times* quoted Dr. Seletz as asking his colleagues if they were men or mice when they went to court. He went on to say, "It is high time we put a stop to this disgraceful imposition upon us by a group of men who use us and abuse us for their own personal gain." He referred to lawyers' "brutal efforts" to undermine the testimony of expert witnesses for the sole purpose of making money. Apparently the speaker's audience was in complete concurrence with his statement. No dissent was reported and his talk met with hearty applause.

Another speaker stated that among the 9,000 registered physicians of Los Angeles County, one out every fifteen currently was being sued on malpractice charges.

The People Perish

THE POPULAR *Scope Weekly* (Upjohn) recently commissioned an American newspaperman embarked on a world flight to ask a number of distinguished people a single question: If it were within your power to solve one outstanding health or medical problem during 1958, what would it be?" The reply of Jawaharlal Nehru, Prime Minister of India, was characteristic of this wisest and most prophetic of today's leaders:

"I feel deeply that the most pressing health problem . . . for the world—is to keep cool. That may sound as though I am being facetious. I am not. If we . . . let our tempers affect our judgment, if the world is plunged into another war with its awful consequences of modern arms, then nothing else—cancer, heart disease, malaria—none of that will be important anyway."

What hope would be afforded to a sick society if the world's physicians, traditionally its healers, would speak through their several associations, to warn politicians and statesmen that a holocaust waits behind the brink on which we now teeter! If the earth's nations were facing a pandemic of unknown cause, comparable to the Black Death of the Middle Ages, action by the representative bodies of organized medicine would be swift and certain even if to no avail. And the great powers would forget their self-worship and their paranoia and cry to medicine for help. Are physicians collectively so lacking in imagination that the warning of an Einstein and a Russell, the words of Nehru and Schweitzer, the compassionate plea of Pius XII, the prophetic note of Karl Barth, Paul Tilliach, Rheinhold Niebuhr and Radhakrishnan, the statement of Niehl Bohr and of a hundred scientific minds of the highest creativity move them to no action?

On August 15-20, 1958, the 12th General Assembly of the World Medical Association meets in Copenhagen, Denmark. It is a young organization made up of the world's best medical minds—men who think of medicine as having no national boundaries and its province for healing as world-wide. What a wonderful thing it would be if the world's physicians would speak as with one voice to warn that mass death awaits ahead.

On June 23 to 27, the American Medical Association holds its annual meeting in San Francisco. It has become by far the most influential and powerful medical group in the world. If the A.M.A. were the first to speak for life, it seems probable that the W.M.A. would follow its lead, without a dissenting voice. Granted, such action would be unprecedented. It would not be politic. It could never happen voluntarily, except in the free world. To say such action will not take place is not to be cynical—it is to be only factual.

One philosophical leader of the West has pointed out that though man is moral, society is immoral. Perhaps the physician may not be as other men, as Stevenson implied; collectively, he has yet to prove his ability to rise above the social order of which he is a part.

A Single Standard

IN MASSACHUSETTS, chiropractors have again petitioned the General Court for licensure. The state Medical Society in a report to the Court pointed out (in the language of the *New England Journal of Medicine*, the official organ of M.M.S.) "that *straight* or *mixed*, chiropractic is unscientific and its practitioners poorly trained, and that a single standard of medical education and licensure in Massachusetts should be maintained."

As is generally known, there are two schools of thought in the chiropractic profession—straight or mixed—differentiated by their respective scopes of practice. In those states where chiropractors are regulated, they exert continued pressure for more freedom to practice.

The situation in Massachusetts, as in any state that has to deal with the regulation of the practice rights of limited practitioners seems relatively simple, if the facts are kept in mind. They who continually press for greater freedom to practice a healing art must be willing to assume the responsibility that greater freedom entails. This means standard medical education in no closed system. It involves training of such compass as to include all scientific and clinically proved knowledge that relates to the maintenance of health and the treatment of disease, and that is currently deemed necessary for the unlimited practice of a healing art.

But medical education is not sufficient. One more step is involved in the assumption of responsibility. Again the *New England Journal of Medicine* has spoken with perfect clarity. These are its words as published in the February 6 issue: "If chiropractors, as they claim, have four years of training, study chemistry, bacteriology, biology, physiology, anatomy, obstetrics, roentgenology and so forth, and graduate as persons well trained to treat the sick, they should be required to take the same examination for licensure as that taken by doctors of medicine and of osteopathy." The issue, in reality not an issue, is just that simple.

Notes in briefer form

A PERMANENT health-careers committee of the Louisville, Kentucky, Community Chest's Health and Welfare Council is an outgrowth of a group organized last year by two high school girls. The group now includes male students and will increase its scope to take in all phases of the health field. It will be guided by Louisville's nearly two dozen health agencies. Excellent source material—HEALTH's authentic career studies, now number 12. Louisville osteopathic physicians, please take note. ¶Today in the United States approximately 116 million people have some health insurance coverage for hospital care; 101 million, for surgical service; 65 million, for medical service in the hospital; and 9 million for physician service in the office, clinic, and home. Major health insurance carriers are Blue Cross and Blue Shield plans, insurance companies through group and individual policies, and independent plans. The last type includes company and union self-insured plans, community-sponsored plans, and prepayment programs offered by private medical groups. ¶Laws to help medical science by saving for research use animals ordinarily killed in public pounds were adopted this year in Massachusetts and Ohio. Approximately four out of five research and teaching institutions in the United States now can obtain dogs and cats from public pounds. ¶One thing can be said definitely about the role of diet in atherosclerosis—indefinitive is the data from current research on the subject. However, research scientists are working at full speed on the trifold problem of how to produce, accelerate, and reverse the deposition of lipoids in cultures of human aortic tissue. Certain findings relate the adult diet's total calories, fat, and animal protein content with atherosclerosis and hypercholesterolemia. The hypothetical "coronary-prone" United States population is estimated at 50 million. Hence there will be a big teaching job for physicians, health educators, and nutritionists, and if the eating habits of a nation have to be changed.

MESSAGE FROM THE PRESIDENT OF THE A.O.A.

▶ My report to you this month has to be secondhand, although it is about a happening of firsthand importance to our profession. I was unable to attend the 1958 National Health Forum program held March 18 to 20 at the Sheraton Hotel, Philadelphia.

Our Association was fully represented by men well-acquainted with National Health Council activities. My place as President was taken by Dr. Floyd F. Peckham, one of our best-known A.O.A. Past Presidents. For several years, Dr. Peckham has been one of three regular delegates to the N.H.C. Serving with Dr. Peckham were Dr. Alexander Levitt, immediate Past Trustee and Past Chairman, Department of Professional Affairs, and Dr. True B. Eveleth, present not only as a regularly appointed delegate but also representing the A.O.A. as its Agency Executive. Dr. Robert D. Anderson, Chairman, Bureau of Public Health and Safety, attended the Forum as an interested observer. From these people I got a good run-down on an annual meeting that is the high point of one of the most important volunteer health bodies in the United States.

For several years A.O.A. publications have been reporting the work of the National Health Council. I am sure you know that its primary purpose is to furnish a conference ground to enable its 63 national agencies to work together toward the common goal of better health for America.

You will remember that the A.O.A. is now rounding out 4 years of Council membership. Those of us who have been in touch with the work of the Council have become convinced that our membership is a privilege and an obligation. It is a privilege for us to meet, once each year at the Forum, leaders of volunteer health movements in America, and with them to identify and study some one big national health problem. "Urban sprawl" was this year's problem, described on the program this way:

"Urban sprawl is changing the face of America. Our cities face drastic changes; suburbs take on new characteristics; villages become suburban areas. Three out of five Americans—96 million persons—now live in metropolitan areas and the percentage steadily increases. . . . What changes are needed to protect and promote the health of our people affected by urban sprawl?"

First on the program was the National Advisory Committee on Local Health Departments, meeting jointly with the Forum for the tenth time. I agreed with our delegates that this was a to-the-point meeting. As a country doctor and a general practitioner, I know that not all community health services are equipped to do the job required of them. Authorities at the Forum were agreed that state and local health agencies are due for a sharp change; county health societies need to be sharply revised; one-fourth of the counties of the United States have no organized health departments (it was stated that this is nearly 10 per cent of our population); many local health departments furnish only the slightest service, and are unprepared to meet today's needs.

In many sections of the country, people are not "educated" to use "public" services, even when they are provided locally. As one speaker pointed out, in many areas of little or no health organization, local hospitals must assume increased responsibility for community health. Since some of our osteopathic hospitals are located in these areas, this is a point for our hospital administrators, chiefs of staff, and staff doctors to take note of. In some cases, hospital administrators could well serve as local health officers.

The whole question of the development of community health service has become a live issue in America, forced on us by urban sprawl. I have a summary of the remarks of Jack C. Haldeman, M.D., Deputy Chief, Bureau of Medical Services, Washington, who spoke on this topic out of his nationwide acquaintance. He emphasized the fact that "today's major health problems require that the people themselves assume more and more responsibility for their own health care. We now know that the history and methods of operation of the community, the feelings and wishes of the people, have an important bearing on the success of the community's health program."

I am sure that those of us who come from the rural areas know, much better than do city dwellers, how truly Dr. Haldeman speaks. You can't force things on country people. They will cooperate only as facts are made known to them. These people act on specific suggestions rather than on general statements. The entire matter of new patterns for community health services, as was said, sets the sights high. Dr. Haldeman reminded his listeners that "there is work to be done and we had best be about it."

This is an example of the way this annual Forum works, straight across the board. Talks by men who know what they are talking about. Free and open dis-

cussion. Panel meetings. Dinners and luncheons where the discussions are continued person-to-person, without planning but with great interest and profit. Throughout the year the administration of the National Health Council maintains contact with member agencies, urging their cooperation with business, labor, and civic leaders.

The Forum said to our profession—look to how you can meet this challenge. It seems to me that our job as physicians in our communities is to consult with other responsible men and women, face the problems with them, and get something done about them in 1958. N.H.C. stands ready to show every community how its leaders can work together for better health.

By the time this letter gets to your desk, I shall be on my way to one of our liveliest and most helpful clinical gatherings—the National Osteopathic Child Health Conference in Kansas City. It is a great affair grown up from a very small beginning. I hope I may meet some of you there. I'll have several late March and early April meetings to report to you in May. May itself will take me to the Midwest, South, Southwest, and West. I will open with the meetings in my own Minnesota and close with the Iowa meeting. The year is drawing to a close, and I hope all of you are planning to attend the A.O.A. Convention in Washington, D.C., this July.

Carl E. Morrison D.O.

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St. Cloud, Minnesota

DEPARTMENT OF PUBLIC AFFAIRS

ROY J. HARVEY, D.O., Chairman

Bureau of Public Education on Health

ROSWELL P. BATES, D.O., Chairman

Bureau to Hold Annual Meeting

▶ The annual meeting of the Bureau of Public Education on Health will be held in the Central Office on April 25-26. Scheduled to be in attendance are Drs. Roswell P. Bates, chairman; Eugene D. Mosier, vice-chairman; E. A. Ward, Phil R. Russell, C. Fred Peckham, and E. C. Goblirsch. The report of the annual meeting will be directed first to the Department of Public Affairs under which the Bureau operates, then to the Board of Trustees of the A.O.A. at its July 1958 meeting.

The annual review of health matters at these meetings of the Bureau and the discussion of problems that have arisen during the year to affect the profession's public education on health program permit the Association to keep abreast of progress toward the profession's health goals.

Bureau members from various parts of the country bring to the meeting information concerning their particular problems. Reports from divisional societies present matters for evaluation by the Bureau in the light of the profession's all-over program.

Many such matters will be discussed at the coming meeting. During the year, a number of states have displayed increased interest in an improvement of procedures to make it easier for doctors who move from state to state to meet local health needs. Methods of examination will also be reviewed. Members of state licensing boards are interested in making the licensing system more modern and efficient. As an aid, the Bureau has undertaken a compilation of licensing and examining statistics for the various state licensing boards. In this, the Bureau is working in cooperation with the American Association of Osteopathic Examiners. A study of these statistics will give evidence of the results achieved by doctors of osteopathy, along with other physicians and surgeons, on state licensing boards. In addition, a study will be made of various state board examination procedures, including the oral or written essay-type examinations, and the objective-type, multiple-question, machine-graded examinations prepared by the professional examination service. The uses made of these examination procedures by the licensing boards will be evaluated.

Throughout the country, increased interest is being displayed in state public education programs, and how they may be of aid in increasing the number of physicians trained annually in osteopathic colleges. It is apparent that scholarship-aid programs to osteopathic college students offer important assistance. Similar programs within divisional societies to increase the number of osteopathic students from individual states will be studied. In many states, there are regional programs directed toward an increased attendance in colleges training physicians and surgeons. The relationships between the proposed osteopathic scholarship programs and these regional educational programs will be considered. Effort will be made to be certain that the osteopathic program in the field of scholarship aid or state grants is consistent and compatible with the existing regional educational programs. Study will be

made to determine legal or legislative factors that may affect the proposed establishment of new osteopathic colleges.

These are only a few of the matters that will appear on the agenda of the coming Bureau meeting. Societies who have problems in need of evaluation should refer them to their divisional society's Bureau of Public Education on Health, to be forwarded to the A.O.A. Bureau. The cooperation that has existed between the A.O.A. and divisional society bureaus has been instrumental in developing and promoting the public health objectives of the profession.

Medicolegal Decisions

Public Policy. Public policy is frequently given by courts as a basis for holding certain acts or conduct illegal. In cases involving the learned professions, for example, it has been stated that the corporate practice of the learned professions for gain is contrary to public policy. "Public policy is that principle of law which holds that no person can lawfully do that which has a tendency to be injurious to the public or against the public good." In effect, public policy is a "principle of judicial legislation or interpretation founded on the current needs of the community." Debasement of the professions is not only inimical to public welfare in fact, but is in contravention of an established and fixed community want. That which tends to debase the learned professions is at war with the public interest and is therefore contrary to public policy. *Bartron v. Codington County,* (South Dakota) 2 N.W. 2d 337 (1942).

Hospital Records. Seventy to 80 per cent of the litigation in courts at the present time is concerned with personal injury cases. In a large percentage of these cases, hospital records are important and even vital in the trial of the case. Hospital records have been most frequently admitted into evidence under the common-law exception to the hearsay rule dealing with business entries. Other bases for admitting hospital records as evidence are that they are public records, contain special guarantees of trustworthiness, or because hospitals are classified as businesses under the Uniform Business Records as Evidence Act. The important problem, with hospital records being made more admissible, is how much of the record is or should be admissible. The general rule seems to be that *all entries necessary for diagnosis and treatment* are properly part of a hospital record and should be admitted. *Trial Lawyer's Guide,* February, 1957, p. 81.

Blood Transfusions. Approximately 3,500,000 transfusions are given each year. The mortality is about one death in 1,000 to 3,000 transfusions. As a cause of death it ranks with appendicitis or anesthesia. Inasmuch as the transfusion of blood is associated with significant medical and legal hazards, such treatment should be prescribed only in instances in which it is essential for the patient's recovery. Among the hazards or dangers involved are errors in blood grouping and cross-matching tests, mislabeling of blood, accidents that occur in taking the blood from a donor, mistakes in identifying blood donor, and, more important than any other, the danger of transmitting hepatitis. It has been suggested that hospitals include in the admission consent or agreement with the patient that the hospital does not guarantee the quality of the blood furnished. *Medical Trial Technique Quarterly,* March, 1958, p. 31.

DEPARTMENT OF PUBLIC RELATIONS

C. D. Swope, D.O., Chairman

Health supplies essential for survival after nuclear attack

The Office of Defense Mobilization has issued a list of the various types of items which might be required to sustain the civilian population and military personnel after a nuclear attack. The tentative list identifies categories of items in six major areas: medical and health, food, body protection, housing, sanitation, and power and fuels. It was developed from a study made by a special interagency committee. "Survival" items are defined by the committee as those which would be required, following nuclear attack, to sustain life at a productive level and without which over a period of time great numbers of people might die or have their health so seriously impaired as to imperil the national survival effort.

The list is now serving as a basis for supply-requirements studies. These studies involve taking an inventory of the nation's supplies and production capacity for the listed items and developing our post-attack requirements for them. When this information is available, a determination will be made of post-attack deficiencies after allowing for potential attack damage to supplies and production facilities.

The supply studies are being undertaken with the cooperation and assistance of industry and private organizations. A survey of hospital inventories of medical survival items by the Department of Health, Education and Welfare is nearing completion. The Department of Agriculture is studying food supplies and those facilities which are essential for the production, processing, and storage of food. The Business and Defense Services Administration, Department of Com-

merce, is about to make an initial survey of manufacturers' inventories and capabilities to produce 90 of the listed items. The Department of the Interior is preparing for a review of the nation's power and fuels resources.

Meanwhile, post-attack requirements estimates are being developed by the Federal Civil Defense Administration for the civilian economy and by the Department of Defense for applicable military needs.

Health supplies and equipment included in the tentative list of items essential for survival are:

A. Pharmaceuticals
acetylsalicylic acid
atrophine sulfate tablets and injections
synthetic plasma volume expanders
digitalis and derivatives
oxygen
surgical detergents
lubricant, surgical
insulin
blood derivatives for shock therapy
water for injections
surgical antiseptics
antibiotics
barbiturates
sulfa drugs
cardiac and respiratory stimulants
oral electrolytes
local anesthetics
intravenous solutions for replacement therapy
morphine and substitutes
general anesthetics
alcohol

B. Blood Collecting and Dispensing Supplies
blood donor set, disposable, field
blood recipient set, disposable, field
blood collecting and dispensing containers
tube, blood collecting, vacuum
intravenous injection sets
blood grouping and typing sera

C. Biologicals
tetanus antitoxin
smallpox vaccine
gas gangrene antitoxin
yellow fever vaccine
diphtheria antitoxin
diphtheria and tetanus toxoids and pertussis vaccine
cholera vaccine
plague vaccine
rabies vaccine
antirabies serum
botulism antitoxin, type A & B
tetanus and diphtheria toxoid
typhoid and paratyphoid vaccine
tetanus toxoid, A.P.
typhus vaccine, epidemic

D. Surgical Textiles
bandage, gauze and muslin
cotton, U.S.P.
compresses (burn dressings, inc.)
bandage, plaster of paris
cellulose, absorbent
dressings, first aid
gauze, absorbent
mask and cap, surgical
gauze, packing, abdominal
sanitary pads
abdominal pads
adhesive plaster
gauze pads
stockinette, surgical
wadding, cotton sheet
gloves, cotton, white for burns

E. Emergency Surgical Instruments and Supplies
tracheostomy set
needles, hypodermic
forceps, hemostat
forceps, tissue
forceps, dressing
holder, needle
blades, surgical knife
handles, surgical knife
probe, general operating
scissors, bandage
scissors, general surgical
sutures, absorbable
sutures, non-absorbable
retractor set, general operating
syringes, hypodermic luer
splint, leg, Thomas
saw, bone
rongeur, bone
razor and blades (for surgical preparations)
drape, surgical, plastic
apron, surgical, plastic
knife, cast cutting
airway, rubber or plastic
drain, penrose
tube, duodenal
splint, wire, ladder
webbing, textile
tray, instrument
tourniquet, nonpneumatic
catheters, urethral
gloves, surgical rubber
needles, surgical
ether mask—inhaler Yankauer
stethoscope
forceps, obstetrical
clinical thermometers
tubing, rubber or plastic and connections

F. Common Use Items
brush, scrub, surgical
buckle, textile webbing, splint
litter
light source, portable, surgical

Grants for psychiatric training

Surgeon General Leroy E. Burney, of the Public Health Service, today announced that grants totaling $13,693,845 have been awarded since July 1, 1957, to medical schools and other institutions for training in such professions as psychiatry, psychology, psychiatric and school social work, and psychiatric nursing.

Under this program the National Institute of Mental Health of the Public Health Service provides several types of support to help meet critical needs for professional personnel.

Teaching grants are used to establish, expand, or improve training in mental health at both graduate and undergraduate levels. Institutions supported under the graduate training programs include medical schools, hospitals, clinics, psychology departments of universities, collegiate schools of nursing, schools of social work and schools of public health. In addition, these centers can apply for traineeships and stipends for promising individuals.

Ten years ago only 19 medical schools in the United States provided general undergraduate training in psychiatry, whereas 82 schools of medicine and 6 schools of osteopathy now teach psychiatry, the Public Health Service said.

Conference on nursing homes

Dr. James O. Watson represented the American Osteopathic Association at the first nationwide conference on nursing homes and homes for the aged, called by the Public Health Service into a four-day session, beginning February 25, 1958, in Washington, D.C. One hundred and fifty delegates from 28 states were in attendance. The conference divided into 8 technical sections to consider such problems as medical and nursing services, nutrition and food services, social services, health and safety, regulation by official agencies, financing, and administration. There are about 25,000 nursing homes in the United States, containing about 450,000 beds. Ninety-one per cent are privately owned. Privately owned nursing homes average about 18 beds in size. Publicly owned homes average about 69 beds. A 13-state study showed the average cost of nursing home care ranged from $90 to $200 per month. All states license nursing homes. All states license homes for the aged, except Nevada. The conference section on medical and nursing services agreed that the patient should have a medical and social evaluation upon entering the nursing home or home for the aged, and when the patient is away from home and not able to have his own physician, he should have a physician of

his own choice; every nursing home should try to select a "principal" physician to act in an advisory capacity of medical problems of the home and to handle emergency calls.

The conference section on financing reported that the minimum need for construction of nursing homes is 100,000 beds, representing the replacement of some 100,000 beds in existing nursing homes that are not acceptable. Based on an estimated cost of $3,600 per bed for homes offering skilled nursing care, this amount of construction would cost $360,000,000.

The section pointed out that "a substantial number" of additional beds is also needed, but declined to give an exact figure because reliable data are not available.

A recommendation for Federal legislation to encourage financing of construction was adopted as follows: "There is need for Federal legislation to further encourage financing for the construction and renovation of nursing homes and homes for the aged, including a set of recommended standards for use by the financing agencies, when such construction or renovation meets clearly demonstrated local needs. The need for such legislation is so urgent as to require prompt consideration by the appropriate executive and legislative sections of the Federal Government."

THE A.O.A. CODE OF ETHICS

*The "Ethical" Physician**

▶ Sections 8, 9, and 10 of Chapter II, Article I, of the Code of Ethics relate to ethical matters which, in the parlance of healing art professions, have had much to do with the perpetuation of the term "ethical physician." Section 8 relates to the identification of a physician with testimonials or advertising relating to proprietary products or devices sold directly to the public. Such associations between doctors and products sold to the public which were common many years ago have now, due to the efforts of the two national professional associations of physicians and surgeons, become infrequent. The professional associations recognized that the professions could not exist if members of the professions associated themselves with commercial sale or advertising. The identification of doctors with such products, it is recognized, does not tend to elevate the profession nor does it involve, generally speaking, the use of the professional learning required of a physician and surgeon. This is not in any way to be derogatory concerning such products, but rather to recognize that their use is largely of a palliative character. Thus a physician may now identify his name only with products whose sale or use is restricted to licensed physicians and surgeons. Licensed physicians and surgeons possess the necessary education and training to evaluate the efficacy of such products and their scientific basis. The members of the profession, because of their scientific education and experience, are equipped and qualified to evaluate and determine the therapeutic value of such products. Even so, there are definite restrictions applicable even to the identification of a doctor with products sold only to physicians.

The prohibition against the use or advocacy of any "secret method or appliance for the treatment of human ailments" is so well recognized and accepted as to require almost no comment. The healing art professions exist for the public good. The scientific developments occurring in the treatment of human ailments must be available to all qualified physicians and surgeons. The use of a secret method would prevent the impartial evaluation and examination of any such method or appliance and would tend to commercialize the practice of medicine. Thus it is that all of the great developments of science and medicine have been made available to all of the healing arts down through the years. This is a policy that has operated to the benefit of the profession and the public. The use of any "secret" method or appliance today is clear evidence that the method or appliance cannot bear the scrutiny of the scientists and doctors. Reliance upon any such method or appliance establishes the physician as having deviated from the accepted standard of professional practice.

In an earlier article discussing advertising, it was pointed out that a physician cannot himself advertise or exploit the practice of osteopathic medicine. In the same manner, it is directed that he may not associate with any institution or individual whose professional conduct is not in accord with the Code of Ethics. The standing of a profession in a community and the reliance and confidence which the public possesses in regard to that profession in the community are heavily influenced by the standards of conduct maintained by both the doctors and the institutions. The public considers both as one complete health service; to attempt completely to disassociate them ethically would lead to confusion and a lowering of health standards. The institution is, therefore, just as subject to the general principles expressed in the Code of Ethics as are the doctors who staff the institution.

*This is the eighth in a series of short articles on the meaning of ethical standards as applied to the practice of osteopathy; the first three were published in the July, August, and September 1957 issues of THE FORUM OF OSTEOPATHY. Subsequent articles have been published in THE JOURNAL, beginning with the December 1957 issue. The A.O.A. Committee on Ethics and Censorship strongly urges the reprinting of these articles, wholly or as excerpts, as they appear from month to month. In all cases, wording should not be changed but reprinted verbatim.

A.O.A. ACTIVITIES

In the public mind there is a term commonly used to express the doctor possessing the respect and confidence of the people. That term is "ethical physician." The development of this attitude or expression of confidence toward a doctor described by the term "ethical physician" is developed by the maintenance of high standards of professional conduct in regard to advertising, exploitation of secret methods or appliances, and conformance with the general principles of the Code by both the doctors and the institutions with which the doctors are associated. If an institution does not have an acceptable reputation, then the doctors who practice in the institution will suffer in the public mind. No better acceptance can be achieved by a doctor or hospital than to be called "ethical." Sections 8, 9, and 10 discussed above can do much to help doctors achieve this status.

Headquarters Activities

Busy Season for Convention Bureau

The A.O.A. Bureau of Conventions is busy with preparations for this year's convention, which opens in Washington, D.C., on July 14 and continues through the 18th. The Bureau chairman, A.O.A. Executive Secretary True B. Eveleth, Business Manager Walter A. Suberg, and their staffs are immersed in the multitude of arrangements and decisions that add up to the Association's annual $250,000 production, to be staged this year in the Sheraton Park and the Shoreham hotels of the nation's Capital.

The responsibility of the Bureau is to arrange for the housing of the 2,000 physicians and guests who are expected to be in attendance, and to furnish space and facilities for the panorama of meetings, exhibits, and entertainment that make up the annual A.O.A. convention.

Dr. Eveleth and Mr. Suberg are aided by General Program Chairman Richard O. Brennan, Houston, Dr. Chester D. Swope, Chairman of the Local Committee, and the two convention hotel managements to insure a smooth-running program of learning and recreation.

As is the case in every annual meeting, this year's arrangements have not been made overnight. Set into motion more than three years ago, they have followed the traditional process that starts with the invitation extended by the convention city, a review of its convention facilities, reports to and by the A.O.A. Convention City Committee, and finally the official choice by the A.O.A. House of Delegates.

The work of the Bureau encompasses a staggering volume of correspondence and detail. Plans must be correlated with those of Dr. Swope and his Local Committee; Dr. Brennan and the program chairmen of affiliated groups; the managements and staffs of the convention hotels; and with those who put on the convention's commercial and scientific exhibits.

To insure a smooth meshing of this multitude of activities, the Bureau maintains a day-to-day chart of program events. This represents the meticulous attention that is given to all arrangements for registrations, accommodations, meeting rooms, decorations, breakfasts, luncheons, dinners, sight-seeing tours, and entertainment. It reflects the day-to-day crises in program planning. Over-all, it tells the story of the work that goes into a well-tailored, smooth convention product, the goal of the A.O.A. Bureau of Conventions.

Patricia Guinand

Bureau of Hospitals has new secretary

Patricia A. Guinand has become a member of the Central Office Staff as secretary of the A.O.A. Bureau of Hospitals, succeeding Dr. Robert A. Steen.

Miss Guinand brings to her assignment an impressive background. She holds a Bachelor of Science degree in Medical Record Library Science, conferred by Indiana Uni-

versity in 1956. Her first two years of undergraduate study were taken at Michigan State University. She is a member of the American Association of Medical Record Librarians, and holds the distinction of being registered by this association as a Registered Record Librarian.

Professional memberships also include the Michigan Association of Medical Record Librarians and the American Business Women's Association. Music and reading head her list of leisure activities, and swimming is her favorite sport.

Prior to joining the A.O.A. staff, Miss Guinand was the Medical Record Librarian of the Bay Osteopathic Hospital, Bay City, Michigan. She is the daughter of Dr. and Mrs. H. William Guinand of Evart, Michigan, both well known in osteopathic circles. Dr. Guinand is a member of the A.O.A. House of Delegates and a past president and present trustee of the Michigan Association of Osteopathic Physicians and Surgeons. Mrs. Guinand is a past president of the Auxiliary to the Michigan Association.

Announce medical films for A.O.A. convention

Through Jack Hanks, P.&P.S. audio-visual director, the Bureau of Conventions and Program Chairman Richard O. Brennan are arranging an ambitious progam of medical films, to be shown Monday through Thursday, July 14 to 18, at the Washington convention.

To be run each morning and afternoon are films covering a broad span of subjects. Their titles include: "Mantle of Protection," dealing with advances in rheumatic fever therapy; "Therapy Influencing the Autonomic Nervous System"; "Malnutrition in the Hospital Patient"; "The Treatment of Varicose Veins"; "Health Careers"; "New Concepts in the Management of the Failing Heart"; "Pitfalls in Management of Refractory Heart Failure"; "Radiosotopes — Their Application to Humans"; "Arterial Insufficiency of the Extremities"; "Peripheral Vascular Disease"; and a medicolegal film yet to be released.

An audio-visual innovation will be the Tuesday evening's medical film session. One purpose of the two-hour showing will be to acquaint physicians with the comprehensive subject matter available to them for local meetings.

To expedite Convention Bureau service to speakers and scientific exhibitors, Mr. Hank will be in charge of all audio-visual equipment. Available through him will be projectors, screens, tape recorders, microphones, and the services of projectionists.

Mrs. Hanks receives promotion

Mrs. Ruby Hanks, who joined the Business Department of Central Office two years ago, has been promoted to the post of assistant to Business Manager Walter A. Suberg. In this capacity, she will play an increasingly important part in the advertising program and in other phases of the work in the Business Office.

P.&P.S. PReviews and PRojects

▶ **Awards Contest**—Three medical writers for newspapers in Texas, Missouri, and Michigan have been named winners of the first American Osteopathic Association journalism awards competition.

They are Blair Justice of the *Fort Worth Star-Telegram,* Conwell Carlson of the *Kansas City Star,* and Merle Oliver of *The Detroit News.* Each award is for $100. The winning story by Blair Justice described a childbirth under hypnotic anesthesia at the Fort Worth Osteopathic Hospital. The reporter watched the delivery and described how the mother remained awake the entire time.

Edward Eulenberg

Conwell Carlson's article was one of a series written about speakers at the meeting of the American College of Osteopathic Surgeons and affiliated groups last fall in St. Louis. He pointed up the warning of Martyn E. Richardson, D.O., against a little-noted deficiency of vitamin C in the diet of many American children. Dr. Richardson's paper was entitled "The Role of Ascorbic Acid in Bone Healing."

Two stories about the actions of the Michigan State Medical Society in seeking a working relationship with state D.O.s won Merle Oliver the third award.

Contest judge was Edward Eulenberg, director of Northwestern University's Medill School of Journalism and an editorial executive of the *Chicago Daily News.* His criterion for selection of winners was the journalistic excellence of the articles. The awards were not categorized by subject matter and included stories dealing with hospital practice, scientific lectures, and interprofessional relationships.

The winning articles were submitted by their authors from the thousands of stories about osteopathy that appear in newspapers each year. These first awards, reflecting a wide variety of material, contribute to a better understanding of the profession.

"The contest offers a way for the osteopathic profession to show its gratitude to medical writers who seek to explain the contributions of osteopathic medicine," said Robert A. Klobnak, P.&P.S. director. "The awards recognize medical writers who show sincere interest in the health needs of the country."

Audio-Visual—Audio-Visual Director Jack Hank is preparing additional scripts for the new A.O.A. radio series to be entitled "Public Health Enemies." Each of the 13 programs will discuss a major health problem. The first script, which concerns heart disease, has been approved by the U.S. Public Health Service; this agency will provide technical assistance for the series. The A.O.A. has been granted permission to use the credit line "Based on technical assistance provided by the United States Public Health Service."

Director Hank also announced that the division will aid local groups and individual physicians with television appearances. Outlines of question scripts and visual aids can be provided for specific situations. Mr. Hank urged physicians to contact the division as soon as the television commitment is made.

"Nothing so reassures a television director as knowing that his interviewees are aware of time and space problems. The guests who come prepared are the ones who are invited back," he said.

Staff travels

Dr. True B. Eveleth, A.O.A. Executive Secretary, and **Robert A. Klobnak,** P.&P.S. director, attended the National Health Council's 1958 Forum, held March 17 in the Sheraton Hotel, Philadelphia. Mr. Klobnak also attended the April 9 to 11 meeting of the American Public Welfare Association, held in St. Louis.

Otha W. Linton, P.&P.S. press representative, was in Delaware County, suburban Philadelphia, on March 17, to handle press coverage for the ground-breaking ceremonies of the Suburban Osteopathic Hospital.

Dr. Clyde C. Henry, director of hospital inspections, left the Central Office on March 11 to spend the remainder of the month inspecting hospitals in Texas, California, and Colorado.

Dr. Raymond P. Keesecker, Editor, spent March 12 and 13 in Des Moines, Iowa, as the guest of the Polk County Osteopathic Society. He was the speaker at the society's March 12 dinner meeting. His subject was "The Osteopathic Situation."

Lawrence W. Mills, director, Office of Education, was a speaker at two vocational guidance meetings in Ohio, the first on March 19 in Columbus and the second on March 21 in Lima. Mr. Mills will spend the third week of April in Iowa, visiting colleges and attending at least two osteopathic district meetings.

On March 19 Josephine Seyl, supervisor, Department of Information and Statistics, was in Washington, D.C., in attendance at the Seminar on Special Surveys conducted by the American Society of Association Executives.

Walter A. Suberg, Business Manager, was away from Central Office from March 25 to April 9 on a combined business and vacation trip in Miami, Florida.

Jack Hank, P.&P.S. audio-visual director, was in St. Louis from March 31 to April 3, to man the A.O.A. exhibit at the annual convention of the American Personnel and Guidance Association.

Current Literature

Ectopic pregnancy

▶ IT HAS BEEN SAID that ectopic pregnancy is the most frequently missed diagnosis in the domain of gynecology. In the January 1958 issue of *California Medicine,* Pendleton Tompkins, M.D., reports his experience with extrauterine pregnancy over 8 years. Of 26 diagnoses of ectopic pregnancy, 5 were false (20 per cent), and in 3 cases (10 per cent) the diagnosis was not made promptly, so that the total error was 30 per cent. A high index of suspicion is necessary if earlier diagnoses of ectopic pregnancy are to be made. The physician should ask himself early in every case of pregnancy whether it is certainly an intrauterine pregnancy, and patients should be seen soon after the menstrual period is missed. Any change in the character of the last menses should be noted. The most significant single sign of tubal pregnancy is dark bleeding described as brown, chocolate colored, sooty, black, or tarry. An adnexal mass should be looked for in every patient who has missed a period or had a "peculiar" period. When consultation does not bring agreement on diagnosis, a third opinion should be obtained. Pregnancy tests are unreliable in diagnosis. Decidual casts, formerly considered pathognomonic of extrauterine pregnancy, were passed by two of the author's patients who had

ectopic pregnancy and also by two who did not. Blood cell counts were not helpful. Culdoscopy may be helpful in questionable cases if no adnexal mass is felt.

The treatment of ectopic pregnancy is immediate operation. The conceptus can be easily enucleated from the oviduct. Bleeding from the tube is slight and easily controlled. The oviduct will heal without repair, and free blood need not be removed from the pelvis; it will not cause adhesions.

Clinical experience with amisometradine (Rolicton) on ambulatory patients

▶ THE USE OF A NEW aminouracil derivative to control the edema of congestive heart failure in 25 patients is described in the January 1958 issue of the *American Heart Journal* by Martin S. Belle, M.D. All the patients were ambulatory and all had been poorly maintained on other diuretic medication. Rolicton was given orally in doses of 200 to 400 mg. four times a day, so that the total dosage range was 800 to 1,000 mg. daily. Progress was determined by weight gain or loss. Later, mercury was administered parenterally if required. A definite diuretic response was obtained in all but one patient. In another patient, the drug was discontinued because of nausea and vomiting. No true toxic effects were noted, and Rolicton proved compatible with other drug therapy. In 17 patients (68 per cent) Rolicton replaced other diuretic therapy entirely, and in 6 (24 per cent) it permitted a decrease in the frequency of parenteral mercurial therapy. The author feels that this drug has a definite place in the maintenance therapy of mild and moderate congestive heart failure. Since it is a nonmercurial, nonsulfonamide diuretic, it does not have the limitations of such compounds. Its lack of side reactions and toxicity plus its failure to cause resistance make it a desirable oral diuretic. Since it is compatible with other medication, does not cause electrolyte imbalance, and appears safe even in the presence of kidney or liver impairment, Rolicton may also be used in treating severe congestive failure as an adjunct to parenteral mercurial therapy.

The use and abuse of blood transfusions

▶ IN THE FEBRUARY 1958 issue of *The Surgical Clinics of North America,* Vernon L. Guynn, M.D., and John T. Reynolds, M.D., discuss three problems connected with the transfusion of blood. First and most frequent is disturbance of distribution of the extracellular fluid of the body due to under- or overtransfusion; second, disturbance of electrolyte balance, usually as a result of the citrate; and third, disturbances of the clotting mechanism. In depleted patients, the serum protein level may be normal and the only evidence of depletion may be loss of weight. This weight loss suggests negative nitrogen balance, which should be corrected before operation, since such patients may be unable to withstand even the slightest upset in the distribution or volume of their circulating blood. If the deficit is great enough to result in a demonstrable lowering of protein levels and the patient cannot or will not eat, blood transfusions have to be relied on as the most readily available source of utilizable protein. The patient should receive no less than 100 cc. of blood for every pound of weight gradually lost during the preceding 2 months. During the administration of blood preoperatively, progressive checks of the hemogram may help avoid overtransfusion. The commonest error made when giving blood to a chronically depleted patient is underestimating the need. In undertransfusion the patient may show serious hypotension and tachycardia immediately upon induction of the anesthesia and be erroneously considered inoperable. The hazard of undertransfusion is greater in patients with internal bleeding than in those with external bleeding. Without external loss, the elevated pulse, labored respiration, and lowered venous pressure are much earlier and therefore more useful signs of blood loss. In such cases, the lost blood must be replaced so adequately that the patient will tolerate emergency surgical intervention, which often becomes necessary. The circulating volume must be maintained with blood and not with saline and glucose or plasma expanders.

The addition of an officer whose sole task is to correlate blood loss and administration with the patient's condition helps avoid both under- and overtransfusion. Excess transfusion does not produce arterial hypertension; rather, it causes overfilling and, after right heart failure has begun, hypotension. The excess blood must be removed rapidly in order to eliminate the strain on the heart. It is usually sufficient to withdraw 500 cc. into a transfusion bottle. Probably no more than this should be withdrawn at one time. Other hazards of transfusion are citrate intoxication and ammonium or potassium retention, which assume real significance in the face of a failing liver or kidney. The initiation of additional clotting problems, especially those associated with the activation of fibrinolysins, must be constantly borne in mind.

An analgesic mixture for minor surgical procedures in young children

▶ THE USE OF a parenterally administered mixture of meperidine hydrochloride (Demerol), chlorpromazine hydrochloride (Thorazine), and promethazine hydrochloride (Phenergan) is described in the January 1958 issue of the *Journal of Pediatrics* by Fred N. Mitchell, M.D., and George R. Minor, M.D. The authors have used this combination in patients undergoing cardiac catheterization, angiocardiography, and a variety of minor surgical procedures. The usual dose is 0.2 ml. per kilogram of body weight or 1.75 ml. per 20 pounds of body weight; however, the maturity of the patient should also be taken into account when computing dosage, as some older children who required further sedation were underweight because of their cardiac condition. The patient usually remains somnolent for about 3 hours, but some may remain in a sleepy state for as long as 10 to 12 hours. This was not a source of alarm as the patient could easily be roused and given fluids, food, or medication. If the patient is found to be too profoundly depressed, reversal of the action of meperidine, the most powerful of the triad, can be accomplished with N-allylmorphine hydrochloride (Nalline). In the authors' 89 cases of catheterization and angiocardiographic studies, there were 2 instances of chill and vomiting following prolonged procedures. Three patients had transient moderate hypotension, and six had an increased respiratory or pulse rate by the end of the procedure. The blood loss in some of the smaller patients was sufficient to account for these changes. There were no instances of unsatisfactory sedation, although in four instances additional medication was required. No reaction to the drugs themselves was encountered. The authors feel that the mixture has proved safe, easy to administer, effective in sedating infants and small children, and also that it has reduced postoperative complications and need for nursing care.

Wandering liver and tachycardia

▶ ACCORDING TO R. R. Grayson, M.D., in the February 1958 issue of *American Heart Journal,* most physicians are unaware of the possibility of hepatoptosis and do not include this condition in their differential diagnosis of upper right quadrant pain and enlargement of the liver. The case of a woman, aged 45, is reported. Upper right quadrant pain and enlargement of the liver were apparent only when the patient was erect. Exhaustive studies failed to show any cause for these symptoms,

nor was there any explanation for the transient tachycardia from which the patient also suffered. Finally an exploratory laparotomy was performed for the transient hepatomegaly. No abnormalities of any of the internal organs were found, except that the liver was more freely movable than normal, and the surgeon could easily pull that organ down into the abdomen. A large biopsy of the liver revealed normal architecture. After the operation the patient was given an abdominal support that tended to hold the liver up under the right thoracic cage. Her symptoms, including weakness and tachycardia, recurred when she did not wear the support. The episodes of tachycardia, faintness, and dizziness at odd intervals for many years were probably due to the hepatoptosis that caused the upper right quadrant pain. The descent of the liver causes circulatory changes resulting in circulatory symptoms including tachycardia. These circulatory signs may be reflex in nature or a mechanical factor might be involved.

The parenteral use of iron in the treatment of anemia

▶ THE USE OF a solution of low molecular iron-dextran containing 50 mg. of elemental iron per milliliter is described by Albert B. Hagedorn, M.D., in the December 11, 1957, issue of the *Proceedings of the Staff Meetings of the Mayo Clinic.* The dose used was 5 cc. (250 mg.) of iron (Imferon) injected simultaneously into each gluteal region daily until the desired amount had been administered. With such a program, 2000 mg. of iron can be given within 4 days. This is the equivalent of the maximal amount of iron supplied by eight transfusions of 500 cc. of whole blood.

In this series there were no significant local or systemic reactions. Hematologic response was satisfactory and equal to or better than that observed with intravenous therapy. It would appear that iron given intramuscularly should essentially supplant the further use of intravenously administered iron, because of the relative safety of the former compared to the latter. In addition, fewer injections are necessary, and the overall cost of equal dosages of iron is far less for this solution than for other types. The danger of transfusion reaction, antibody response, and homologous serum jaundice are all circumvented by intramuscular administration of iron-dextran complex when the sole need is iron.

Among the indications for intramuscular use of iron are cases in which oral use is contraindicated because of some underlying pathologic factor such as regional enteritis or active chronic ulcerative colitis; patients intolerant or unresponsive to iron taken orally; and infants with iron-deficiency anemia. Intramuscular administration of iron is reported to be poorly effective or ineffective in immobile bed patients, markedly obese patients, and patients with significant chronic infections.

A critical evaluation of anticoagulant therapy in peripheral venous thrombosis and pulmonary embolism

▶ A STUDY BASED ON the records of 511 patients who had received anticoagulants is described in the February 1958 issue of *Surgery, Gynecology and Obstetrics* by W. W. Coon, M.D., J. W. Mackenzie, M.D., and P. E. Hodgson, M.D. The age distribution was similar to that noted in other studies on thromboembolism; 77.5 per cent were 40 years of age or older. No difference in age was found in a comparison between patients with an initial manifestation of venous thrombosis alone and those with pulmonary embolism or between those with complications as compared to those free of complications. There was a wide range of diseases in association with thromboembolism. Forty-two of the 511 patients had a fracture of the femur or tibia; however, the incidence of complications of the thromboembolic disease was no higher in this group than in the group as a whole. Eighty-eight patients had some form of heart disease. A significent number of patients developed thromboembolic disease in the postoperative period, with the peak incidence on the fourth and fifth postoperative days. Heparin was the only agent given to 10 patients. Of the remaining 501 patients, 65 per cent received heparin until a therapeutic effect had been obtained with orally administered prothrombinopenic drugs. There was no significant difference in complication rate between the 175 patients who did not receive initial heparin therapy and the 326 patients who did.

Almost all the patients were treated until all clinical manifestations of the disease had disappeared. It was not found that the duration of anticoagulant therapy has a critical influence on the rate of complications. Furthermore, there was no evidence that a specific period of treatment is necessary to minimize the occurrence of complications. The study did indicate that caution is necessary in providing adequate anticoagulant therapy in patients with coexisting heart disease. The duration of thromboembolic disease prior to initiation of therapy did not influence the complication rate. It was not possible to determine by the quick method the optimal level of "prothrombin activity" necessary to lower thromboembolic complications. The authors believe that anticoagulants have prevented death in 7 of every 10 patients whose venous thrombosis or nonfatal pulmonary embolism was recognized and treated, when compared with the expected mortality associated with use of conservative measures alone. An appreciable reduction in morbidity and mortality from thromboembolism must await more accurate clinical or laboratory diagnosis of this process, or a rational, economically feasible program for mass prophylaxis.

The surgical diagnosis and management of dysfunctional uterine bleeding

▶ ON THE BASIS OF a study of 464 hospitalized women, Equinn W. Munnell, M.D., and Ferdinand H. Flick, M.D., discuss uterine bleeding from unknown, benign causes in the March 1958 issue of *Surgery, Gynecology and Obstetrics.* Slides from the entire group were reviewed in an effort to show some fairly uniform histologic finding for dysfunctional bleeding in normal endometria. None was found. Lack of ovulation accounted for bleeding in some patients. The great majority of patients had normal endometrium, while about 16 per cent had hyperplasia of the endometrium, usually cystic glandular in type and occasionally adenomatous. Anemia and thyroid dysfunction were infrequent. Fertility was normal before and after the occurrence of dysfunctional bleeding except in cases due to hyperplasia, in which fertility was normal before bleeding but markedly diminished after curettage. In the 464 cases, initial surgical therapy consisted of dilatation and curettage in 83 per cent, dilatation and curettage plus radium in 13 per cent, and hysterectomy in 13 per cent. Hysterectomy should rarely, if ever, be the initial surgical treatment; curettage is preferable for both therapy and diagnosis as an initial measure. Curettage alone produced prompt cure of bleeding in 72 per cent of patients with hyperplasia and in 87 per cent of those without hyperplasia. Dilatation and curettage with radium or x-ray was 100 per cent effective in both types of patients. There was recurrence of bleeding months or years later in both hyperplasia and nonhyperplasia groups, but it was twice as frequent in the former. There were recurrences in both the curettage-radiation group and the group treated by curettage alone. Recurrent bleeding from cystic glandular hyperplasia after curettage may be treated by hysterectomy in view of the greatly reduced fertility associated with this disease, with the exception that young women should be treated conservatively. The obscure relation between cystic glandular hyperplasia and adeno-

matous hyperplasia, the latter occasionally precancerous, makes hysterectomy preferable to radiation castration. Hysterectomy is indicated once a diagnosis of adenomatous hyperplasia is made, but there is often disagreement in this diagnosis. If non-hyperplastic endometrial bleeding recurs after curettage, a second curettage is indicated in view of the high incidence of cure following this. For a third occurrence hysterectomy is indicated in older women and perhaps a third curettage in younger women.

Treatment of undulant fever

▶ IN THE JANUARY 25, 1958, issue of the *Lancet*, J. Torres Gost reports the use of a new antibiotic, cathomycin, in undulant fever. Twenty patients with a positive blood culture were treated when the undulant fever was at its height. The drug was given orally, 0.25 gram every 4 hours until the day after the crisis (usually the sixth day) and then every 6 hours for 9 days, to a total of 18 grams. On the third day of treatment liver function tests gave normal results. Leukopenia, which was very severe in some cases, rapidly disappeared. Anemia, which is also common in undulant fever, gradually disappeared. Almost always on the fifth day, pyrexia resolved by crisis and all symptoms (headache, insomnia, articular pain, anorexia, sweating, et cetera) ceased. By the end of treatment the spleen had returned to normal size and shape, regardless of degree of enlargement. None of the patients had a relapse. In a quarter of the patients an urticarial eruption developed, but therapy either could be continued or was already sufficient to effect a cure in these cases. The author concludes that if his findings are confirmed by others the battle against brucellosis will have been won with cathomycin.

Farmer's lung—a form of pneumoconiosis due to organic dusts

▶ TWENTY-SEVEN CASES of farmer's lung are discussed by Ralph C. Frank, M.D., in the February 1958 issue of *The American Journal of Roentgenology, Radium Therapy and Nuclear Medicine*. Two fundamental reactions are considered to be involved in the disease process. There is an initial pulmonary response to inhalation of organic dusts, involving a granulomatous reaction with associated interstitial fibrosis. Later, sensitization to such dusts is believed to occur, and there is progressive pulmonary fibrosis on repeated exposure. The dusts are most often those from severely moldy hay, grain, or silage, and the heavy fungal spore content of such dusts is believed largely responsible for the disease, although rarely the syndrome is caused by vegetable dusts that are not significantly moldy. A minor form of the disease apparently occurs, with dyspnea, chills and fever, and night sweats lasting a day or two, after exposure to clouds of dust associated with threshing fresh grain. A typical acute episode following exposure to the causative agent is characterized by increasing dyspnea, cough that is usually nonproductive, fever and chills, night sweats, and weight loss. Weight loss was severe when it occurred in this series, varying from 5 to 65 pounds and averaging 29 pounds. Some permanent disability may follow the initial attack, and increasingly severe disability is certain to follow repeated exposure, once sensitization has occurred. In these cases, pulmonary emphysema, fibrosis, and right-sided heart strain occurred after repeated episodes. No distinctive laboratory findings were apparent. The characteristic roentgenographic changes in the acute stage were a fine to coarse granular mottling scattered diffusely through both lung fields. Means of avoiding inhalation of all organic dusts of hay, grain, or silage would be the only effective prevention and would depend on wide dissemination of knowledge about the dangers of such inhalation as well as the usefulness of masks, respirators, and barn fans. Careful avoidance of storing wet hay and grain would also be an important preventive factor. Once the disease process is established, removal of the patient from the farm environment is indicated.

The outlook for future pregnancies in women immunized to Rh

▶ A STUDY BASED ON the histories of 241 women delivered of 302 infants after they became immunized to Rh is presented by Edith L. Potter, M.D., in the February 1958 issue of the *American Journal of Obstetrics and Gynecology*. The case histories analyzed extend back 20 years, so that there is a smaller total of living children than there would be if only current pregnancies had been used, since the diagnosis of erythroblastosis was rarely made in a living child until 10 years ago. The subsequent pregnancies, however, show practically no difference today from those that were observed many years ago. Among currently observed infants there are fewer deaths and more survivors than in the entire group, but the proportion of stillbirths among affected infants is unchanged. Of the total of 302 erythroblastotic infants, 49.3 per cent survived, 25.2 per cent died, and 25.5 per cent were stillborn. The corresponding figures for the past 10 years were 58 per cent, 19 per cent, and 23 per cent. The figures in this study do not bear out the often repeated statement that the disease can always be expected to be more severe in succeeding pregnancies. Although more first-born affected children live than die or are stillborn, the siblings of these surviving children will also have a greater chance of surviving. In this series, the child born after any surviving erythroblastotic infant also survived in 50 per cent of the cases. After the birth of a child who died, the next child survived in 20 per cent of cases. After a stillbirth, the survival rate for the next child was only 10 per cent. From these data and from inspection of individual case histories, it appears that maternal immunization affected all offspring only mildly in some instances while in others the majority of infants were severely affected.

Acute renal failure due to poisons and drugs

▶ ACCIDENTAL AND SUICIDAL POISONINGS leading to acute renal failure are uncommon in England. In the January 18, 1958, issue of *The Lancet*, G. M. Bull, M.D., A. M. Joekes, M.A., and K. G. Lowe, M.D., present 16 such cases. Of three cases of mercury poisoning, two were suicide attempts. Renal failure was moderately severe, and anuria lasted 8 days in one case and 11 days in the other two. None received dimercaprol within the effective period of the first hour of mercury absorption. Vomiting, diarrhea, and stomatitis occurred, and one patient had a disturbance of the central nervous system in the diuretic phase. One case of suicidal oxalic acid poisoning was seen. Renal failure was severe, and the patient died on the twenty-second day of illness without having had a satisfactory diuresis. Poisoning with hydrochloric acid was rapidly fatal in one case, chiefly because of acid erosion of the respiratory and upper alimentary tracts. Acute tubular necrosis was an incidental finding. No case of methyl alcohol poisoning was seen, but two chronic alcoholics died in acute renal failure. One had lobar pneumonia and acute tubular necrosis, and the other had renal cortical necrosis. There were five cases of obstructive anuria following administration of sulfonamides and three patients who had acute renal failure apparently caused by sensitivity to sulfonamides. With adequate treatment, acute renal failure due to poisons and sulfonamides should carry a high recovery rate. The two deaths in the cases involving sulfonamides were

probably avoidable. Despite the extensive tubular necrosis in mercury poisoning, the three patients in this series made excellent recoveries. The death following oxalic acid poisoning was unexplained and occurred in the recovery phase of the renal lesion. No functional differentiation was found between cases of tubular necrosis resulting mainly from nephrotoxins and those due mainly to renal ischemia.

Facilitating locomotion in neurological disease of lower extremities

▶ IN THE JANUARY 25, 1958, issue of *The Journal of the American Medical Association,* Irving M. Levine, M.D., describes a new appliance primarily for neurologic disorders of the lower extremities. The appliance makes use of the fact that a muscle performs work by contracting. Elastic straps are fixed above a joint at "points of origin" and below it at "points of insertion" corresponding to the underlying muscles. On contraction of the elastic, the joint moves. The opposing movement is carried out by antagonistic muscles that may be normal or even spastic. The appliance was designed to facilitate flexion movements of the hip and knee and at the same time to take advantage of a low leg brace when worn. This leg-lifting apparatus has three essential parts: a lumbosacral belt, a thigh cuff, and a Klenzak foot-drop brace. These parts are attached to one another by elastic straps. The lumbosacral belt, besides serving as a fulcrum for the elastic strap, helps support and stabilize weakened back muscles. A forward or upward movement of the hip on the involved side causes a recoil and contraction of the elastic straps, thus flexing the hip and the knee, while the brace corrects foot-drop and toe-drag. This action requires minimal voluntary forward movement of the hip. The downward stroke of the limb is then carried out by the hip extensors and quadriceps. The patient thus walks with a more fluid "knee-action" type of movement. The fundamental components of the brace may serve as anchor points for other types of elastic attachments. The appliance can be manufactured cheaply, is easily applied even by the patient, and is comfortable.

Oral administration of Orinase (tolbutamide)

▶ IN THE FEBRUARY 1958 issue of *California Medicine,* Thomas H. Lambert, M.D., William F. Bethard, M.D., Solon Palmer, Jr., M.D., and Lee S. Monroe, M.D., discuss a study on an orally administered aryl sulfonylurea given to diabetic and nondiabetic persons. Eight nondiabetics were hospitalized for 2 days of study before administration of tolbutamide. Thirty-seven diabetics, including 27 taking insulin (one of whom was juvenile), were hospitalized for from 2 to 4 weeks and an attempt was made to control the diabetes with tolbutamide alone or in combination with insulin. In the nondiabetic subjects, tolbutamide brought about a maximum reduction in blood sugar within 1 to 2 hours. In diabetics who were taking large doses of insulin or who needed insulin for control, hyperglycemia, ketosis, and increased excretion of glucose in the urine developed when tolbutamide was substituted for insulin or was used before insulin therapy was begun. Successful control of diabetes with tolbutamide was limited to cases in which the disease was of mild, stable type and the patient was 40 or more years of age, of normal weight, and with a previous insulin requirement of 5 to 30 units a day. It was of benefit in 16 (43.5 per cent) of the 37 diabetics. The duration of the disease and of insulin therapy did not influence the effectiveness of tolbutamide therapy. The only serious toxic manifestation observed was a skin rash in two patients.

Acne. A new approach to an old problem

▶ EVERY PATIENT with acne seen by general practitioners should be encouraged to undergo treatment, according to John W. Baird, M.D., in the February 1958 issue of *The Journal of Pediatrics.* Roentgenotherapy, systemic use of antibiotics, hormones, cryotherapy, and vaccines are useful in selected cases of acne that would not respond to simpler measures. A simple therapeutic routine should be used, with a mildly restricted diet, simple surgical treatment of the acne, and new, easy-to-use, antiseborrheic medication. The patient should avoid excessive intake of carbohydrates, chocolate, nuts, peanut butter, pork, and fried foods. Milk and milk products should not be taken in excess. The patient should wash his face twice a day with a new lathering cream, instead of soap. The therapeutic activity of this cream is primarily supplied by a combination of surface-active wetting and cleansing agents: sodium dioctyl sulfosuccinate, sodium alkyl aryl polyether sulfonate, and sodium lauryl sulfoacetate. Drying, keratolytic, and antibacterial properties are increased by 2 per cent salicyclic acid, 2 per cent micropulverized sulfur, and 1 per cent hexachlorophene. The cream is also used as a therapeutic shampoo. This treatment routine was found effective in 238 cases of moderate acne and was a valuable adjunct in 133 severe cases that required individualized therapy.

Diffuse obstructive emphysema, a poorly understood disorder

▶ ROGER S. MITCHELL, M.D., and Giles F. Filley, M.D., state in the February 1958 issue of *Postgraduate Medicine* that diffuse generalized pulmonary emphysema is a poorly understood disorder from the clinical, radiologic, physiologic, and pathologic points of view. The cause of the disease remains obscure. Degeneration, atrophy, or accelerated aging is perhaps the basis of the most widely held hypothesis. The universal finding that pure obstructive emphysema is almost limited to males must have some significance. It may be that multiple factors, including loss of elasticity from the stress of chronic cough, chronic infection, chronic inflation from obstruction, and low resistance to wear and tear from accelerated aging, all play prominent roles. In early cases of emphysema, there are no outstanding physical abnormalities noticeable at rest, and dyspnea is evident only on exercise. In advanced cases there is obvious respiratory distress even at rest, and the patient is underweight. The most reliable physical findings in the chest are the signs of impaired ventilation: impaired breath sounds with prolongation of the expiratory phase and inability to increase the intensity of the respiratory murmur to any great degree. The diagnostic unreliability of the simple posteroanterior roentgenogram has been stressed. Lateral films will often show an increased posteroanterior diameter of the thorax with a resultant increase in the retrosternal space and some kyphosis. Fluoroscopy shows a reduced degree of emptying of the lungs and especially a delayed rate of emptying, not always detectable on the inspiratory and expiratory films. The electrocardiogram may show right axis deviation and a prominent P_2. Pulmonary function tests are particularly helpful in patients whose history is presumably unreliable or who have arterial hypertension or heart disease. Diagnosis of emphysema depends largely on a reliable history of dyspnea not caused by other conditions, so that the history is more reliable in diagnosis than is the physical examination. It seems unlikely that further improvement in methods of determining pulmonary function will answer the basic questions of etiology and pathogenesis of emphysema. Further advances in knowledge of the microanatomy of normal and emphysematous lungs and ability to produce the disease experimentally seem to offer great promise.

BOOK REVIEWS

▶ THE HUMAN EAR CANAL. By Eldon T. Perry, M.D., Instructor in Dermatology, Wayne State University. Cloth. Pp. 116, with illustrations. Price $4.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

Congratulations to a dermatologist for making a study of the skin of the ear canal. It is most interesting to compare this author's treatment of his subject with the approach of an otologist. The book is outstanding for its physiologic approach to diseases of the ear canal. This area is in effect a skin-lined test tube, the deeper part of which does not have a means of cleansing itself. Certainly it is one of the regions most abused and misunderstood during diagnosis and treatment.

The author has taken part in the vast amount of basic research which comprises this book. The role of infection as a cause of external otitis has been shown again. The area must be abnormal or conditioned before apparent infection can be induced. The author seeded seven normal ears with virulent strains of pseudomonas from patients with external otitis, and at the end of a week he found not only that there was no external otitis, but also that he could not recover the organism. That fungus infections of the ear have been the diagnostic scapegoat for external otitis, and incorrectly so 99.9 per cent of the time, is shown by the rarity with which fungi invade the ear canal in temperate climates. Cerumen is discussed for the most part to explain that its function is actually little understood; the author shows that it is neither antibacterial nor fungicidal.

If there is a fault to find with this book, it is not the stress laid on the basic sciences but rather the brevity with which the author discusses the diseases of the external ear. The facts are there, but they could be given in greater detail. In addition to being a very informative text the book is beautifully written, and the vocabulary of both medical and lay terms is excellent.

The book is worth any physician's time and is a must for dermatologist and otologist. It speaks so well for the rightful place of the dermatologist in treatment of external otitis. It is he who understands the basic principles of skin therapy better than anyone else.

A. P. Ulbrich, D.O.
Daniel Koprince, D.O.

▶ APPLIED FOOT ROENTGENOLOGY. By Felton O. Gamble, D.S.C., F.A.S.C.R.; President, National Association of Chiropodists. Formerly, Professor of Roentgenology, Temple University, School of Chiropody. Past President and Fellow, American Society of Chiropodical Roentgenology. Honorary Fellow, American Academy of Chiropody; Trustee, Alumni Association, Ohio College of Chiropody. Cloth. Pp. 414, with illustrations. Price $15.00. Williams and Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

Despite the fact that our medical presses labor overtime these days, the publication of a truly new work is a refreshing event. For several decades a need has existed for a comprehensive treatise on x-ray study of the weight-bearing foot. With the appearance of Applied Foot Roentgenology late in the past year, this hiatus was filled in a most admirable fashion. The product of the industry, experience, and wisdom of 20 years, Dr. Felton Gamble's scholarly volume will no doubt constitute a lasting addition to the radiologic literature.

Although intended as a text for the roentgenologist, orthopedist, and foot specialist, the book is of far-reaching importance to the osteopathic physician—indeed, to the osteopathic profession itself. Cited as a "new approach to foot problems," the monograph stands as an impressive example of the singular worth of x-ray methods in the study of human body mechanics. Notwithstanding its limitation to the foot, Dr. Gamble's work provides a prophetic insight into the type of investigation that can and must be done under osteopathic auspices for the "total man." Beginning with the normal and its variations, the author lays particular emphasis upon the interrelationship of structure and function, mechanical dynamics, and the roentgenographic characteristics of the weight-supporting foot. Next, the less desirable but still acceptable morphologic variations are considered. Study of these leads to a series of eight chapters in which the pathomechanical features of numerous disorders are exhaustively analyzed.

The second of the book's two sections is entitled "Office Practice." The more experienced practitioner will find the preliminary material covered in this section excessively elementary; much of it is readily available in standard texts. This objection is far offset by the magnificent presentation of radiographic technic that follows. Seventy-four pages are dedicated to an extensive atlas, incomparably illustrated, with full technical data on a multitude of ingenious methods. As a graphic demonstration of x-ray technic, this presentation is without peer in the American medical literature. Much credit is due Mr. William Taylor, medical photographer of Temple University Hospital, who is responsible for the excellence of the profuse illustrations. The radiographic facsimiles have been reproduced with amazing clarity and detail.

It is greatly to be desired that this significant work be widely read and fully appreciated by osteopathic physicians. The value of this monograph lies not only in its didactic content but also in its unobtrusive philosophic worth. The fact that writing so meaningful to osteopathy should come from another segment of the medical discipline renders its implications all the more thought-provoking. We are truly indebted to Dr. Gamble for his illuminating glance down the unexplored pathway of man's structure in health and disease.

Charles D. Ogilvie, D.O.

▶ GENERAL TECHNIQUES OF HYPNOTISM. By André M. Weitzenhoffer, Ph.D., Stanford University and Center for Advanced Study in the Behavioral Sciences (1956-1957), Stanford, California. Cloth. Pp. 460, with illustrations. Price $11.50. Grune & Stratton, 381 Fourth Avenue, New York 16, 1957.

The author points out that there are roughly 5,000 books and articles dealing with hynotism and suggestion; therefore, there must be a purpose in writing another book on technics, aside from the fact that there is an increased demand for works of all kinds on hynotism.

In his preface, the author states that he has tried to produce a text which could serve for teaching introductory and advanced courses in hynotism at the graduate level in universities. In general, he has succeeded in his purpose. However, he mentions that the contents are for professionals in medicine, psychiatry, psychology, dentistry, and "other allied fields." A criticism that could be voiced at this point is that for a university textbook there are several places where the technics seem directed to the stage hypnotist. Perhaps these people are included by the author in "other allied fields." The technics mentioned may expand the market for the book but their inclusion mars an otherwise scholarly work.

The book is divided into four parts. Part I contains some preliminary remarks on the dangers of hypnotism, emergencies in the practice of hypnotism, and its psychodynamics. Part II deals with waking suggestions. Unfortunately, several of

these suggestions and the illustrations accompanying them appear to this reviewer much more suitable for stage demonstration than for the physician's office.

Part III concerns hypnosis and hypnotic suggestion and discusses a number of methods for inducing hypnosis. There is an encyclopedic compilation of methods which is certainly of academic interest, although the physician, who has only a part-time interest in hypnosis as a therapeutic tool, is better served by being thoroughly acquainted with a few methods and their use in therapy. The section covering drug hypnosis seems incomplete and handicapped by the author's apparent lack of personal experience with the subject. In the chapter on animal hypnosis the author argues vigorously against accepting this as a phylogenetic continuum of human hypnotism. His plea seems more emotionally than biologically supported.

Part IV, the Appendix, contains the bibliography and author and subject indexes.

The book will be of most interest to psychiatrists using hypnosis and, as the author intended, it will serve as an auxiliary textbook for courses at the graduate level in universities.

IRWIN ROTHMAN, V.M.D., D.O.

▶ PRACTICAL ALLERGY. By M. Coleman Harris, M.D., F.A.C.P., Formerly Associate Clinical Professor of Internal Medicine (Allergy), College of Medical Evangelists, School of Medicine, Los Angeles, California; Attending Physician and Chief of the Department of Allergy, San Francisco Polyclinic and Postgraduate College; Attending Physician in Medicine (Allergy), Children's Hospital, San Francisco, California; and Norman Shure, M.D., M.S., F.A.C.P., Associate Clinical Professor of Internal Medicine (Allergy), College of Medical Evangelists, School of Medicine; Attending Specialist in Allergy, Veterans Administration Hospital Center, Los Angeles, California. Cloth. Pp. 471, with illustrations. Price $7.50. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1957.

On a solid foundation of the known facts of allergy in human beings, the authors have built a modern concept of the possible etiologic connection between allergy and many diseases with which it has not usually been associated.

No attempt is made to invalidate former cause-effect relationships. When allergy is suggested as the cause of a disorder, the authors summarize the data pertaining to the classical cause.

The importance of a thorough investigation into the personal, psychologic, employment, and home conditions that may contribute to the patient's sensitivity is stressed.

The book is intended as a diagnostic aid to the general practitioner who, with the allergist, sees the majority of patients with allergic disorders. Because he has too little time to absorb the literature on the subject, and because of the apparent controversies and paradoxes found there, the part-time allergist, the authors believe, has been prevented from keeping up with his growing practice. They hope that this book is the comparatively simple text needed by such physicians.

▶ A Mount Sinai Hospital Monograph on THE MALABSORPTION SYNDROME. Edited by David Adlersberg, M.D., Associate Attending Physician for Metabolic Diseases, The Mount Sinai Hospital, New York; Assistant Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York. Cloth. Pp. 252, with illustrations. Price $5.50. Grune & Stratton, 381 Fourth Ave., New York 16, 1957.

Fifteen articles comprise a symposium on the malabsorption syndrome, formerly termed nontropical sprue and idiopathic steatorrhea.

Beginning with the physiology of intestinal absorption, the subject is discussed from many standpoints: abnormal metabolism of proteins and lipids and of water and electrolytes; disturbed intestinal uptake of vitamin B_{12} and pancreatic enzymes; pathologic findings from both autopsy and biopsy studies; and skeletal, hematologic, and neurologic complications. X-ray investigation of the small bowel is extensively discussed and splendidly illustrated. The clinical presentation is based on follow-up reports on ninety-four patients under treatment at the hospital for an average of 5.2 years.

Treatment is essentially dietary and includes use of gluten-free diet and steroid therapy. Included are reports of new tests for separating idiopathic steatorrhea from the form resulting from pancreatic insufficiency. The malabsorption syndrome is frequently associated with some form of anemia. Newly developed means are presented for differentiating these anemias from one another and from the disorder in absorption which mimics pernicious anemia.

The study should be valuable to those with either research or clinical interest in this baffling disorder.

▶ HUMAN BLOOD COAGULATION and Its Disorders. By Rosemary Biggs, B.Sc. (Lond.), Ph.D. (Toronto), M.D. (Lond.), Graduate Assistant in the Department of Pathology, Radcliffe Infirmary, Oxford; and R. G. MacFarlane, M.A. (Oxon.), M.D. (Lond.), F.R.S.; Clinical Pathologist to the Radcliffe Infirmary, Oxford; Radcliffe Lecturer in Haematology, University of Oxford. Ed. 2. Cloth. Pp. 476, with illustrations. Price $8.50. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1957.

In its second edition, this book is well on its way to becoming a standard in the field of blood coagulation and its disorders. At the time of its first edition it was considered one of the most complete monographs on the subject; this publication is a rewriting and revision of the earlier text, to include current research in the field.

Advances in research since the first edition include the following: Current knowledge concerning the importance of the thromboplastin-generating system of the blood; differentiation between hemophilia and Christmas disease; and the use of the thromboplastin generation test in diagnosis and prognosis of certain clotting defects.

As in the earlier edition, the authors' objective is to provide a text which is neither too elementary for the seasoned worker in the field, nor too esoteric in its content for the ordinary physician. To this end, half of the book consists of clinical descriptions of the states which involve defects in clotting, while the remainder includes considerable experimental data on both normal and abnormal coagulation. It might be judged that their objective is well fulfilled.

▶ THE DIAGNOSIS AND TREATMENT OF INFECTIONS. By D. Geraint James, M.A., M.D. (Cantab.), M.R.C.P. (Lond.); Clinical Assistant, The Middlesex Hospital, London. Cloth. Pp. 234. Price $6.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

There is, of course, a definite correlation between the clinical and laboratory aspects of an infection. The authors of this book believe that the differences between the two points of view often cause confusion, especially in a student's mind. The organization of their book is intended to emphasize the relationship between the two divergent views.

Part 1 is a detailed discussion of the factors surrounding chemotherapeutic agents commonly used today; microorganisms that cause human infections are fully analyzed in Part 2; the third part brings out the unity between Part 1 and Part 2 by describing the infections as they present in various systems. Many carefully prepared charts which organize the basic facts are easily understood and make the book useful as a quick reference. Both physicians and students will find it valuable.

▶ CURRENT SURGICAL MANAGEMENT. A Book of Alternative Viewpoints on Controversial Surgical Problems. Edited by John H. Mulholland, M.D., Editor-in-Chief, New York University College of Medicine; Edwin H. Ellison, M.D., Ohio State University College of Medicine; Stanley R. Friesen, M.D., University of Kansas Medical Center; With Contributions By 76 American Authorities. Cloth. Pp. 494, with illustrations. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1957.

"This book is an attempt to present, side by side, varying viewpoints on certain surgical topics about which there is controversy." The idea for the book grew out of the valuable tendency of surgeons to argue their differences in panel discussions. Each of twenty-seven controversial procedures is discussed by at least two specialists in the field.

The authors state in their preface: "Surgery is an inexact

science. . . . When a conviction is arrived at by study and evaluation of experience, it is presented in the literature isolated and on the basis of factual data. There is overpowering and unjustified authority in a viewpoint so stated without rebuttal."

The book does not purport to provide answers. It merely shows how certain authorities reached their own conclusions. Instead of the presentation of material in the usual way—according to regional anatomy, it is here offered in the order of the magnitude of the problem, according to the surgeon's experience.

▶ MARRIAGE AND PERSONALITY A Psychiatric Study of Inter-Personal Reactions for Student and Layman. By Ainslee Meares, MBBS., B. AGR. SC., DPM. Cloth. Pp. 157. Price $3.95. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

For a person interested either in the practice of marriage counseling or the theory of interpersonal relationships in marriage, this book has something to offer. It is neither a sex book nor a religious guide to marriage, according to the author; it is rather a study of reactions of various personalities in the marriage relationships. Some of the types described are the extravert, the introvert, the latent invert and the obsessive, hysteroid, paranoid, and psychopathic personalities. There are sections describing the relationship of intelligence to marriage, the mature and immature personalities, and factors involved in marriage, personality, and alcoholism.

The content of the book is largely aimed toward understanding rather than suggesting formulas for working out specific differences. This is no disadvantage, since deep understanding usually produces its own best course of action; thus the intelligence of the reader is respected by supplying the materials with which he can best work.

The book is of interest to the physician, as well as the informed layman.

▶ PEDIATRIC PROFILES. Edited by Borden S. Veeder. Reprinted from *The Journal of Pediatrics*, November, 1954-November, 1957. Cloth. Pp. 267, with illustrations. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

A series of biographical sketches of important pediatricians, first written for the *Journal of Pediatrics,* are published in this book. Some of the names represented here are Jacobi, Holt, Koplik, Czerny, Morse, Abt, Cooley, and Marriott; besides these there are many other "greats" in the field memorialized here. The book is, of course, for a special interest group, but within its confines it can be described as very fine.

▶ THE PHYSIOLOGIC BASIS OF GASTROINTESTINAL THERAPY. Selected Topics. By Heinrich Necheles, M.D., Ph.D., F.A.C.P., Director, Department of Gastro-Intestinal Research, Medical Research Institute of Michael Reese Hospital; Attending Physician, Michael Reese Hospital; Professorial Lecturer in Physiology, University of Chicago, Chicago, Illinois; and Martin M. Kirshen, M.D., F.A.C.P., Professor of Clinical Medicine, Chicago Medical School; Attending Physician, Mount Sinai Hospital; Senior Attending Physician, Michael Reese Hospital, Chicago, Illinois. Cloth. Pp. 330. Price $8.75. Grune & Stratton, 381 Fourth Ave., New York 16, 1957.

The authors undertake to fill some of the gaps they believe have been left by cursory and incomplete teaching on the physiology of the gastrointestinal tract. Although all aspects of the subject are admittedly not covered, discussion of the most important topics is followed by enough references to lead the reader into further study.

Beyond discussion of innervation and motility of the gastrointestinal tract and the effect of drugs upon it—fundamental to an understanding of treatment for most disturbances of the tract—the book thoroughly covers the subjects of ulcer, liver and gallbladder, and pancreas. The authors found their students' understanding not too well integrated on the subject of the liver and the varied roles it plays not only in gastrointestinal physiology but also in metabolism and endocrinology. They have therefore devoted a long chapter to a unifying study of this organ.

▶ PRACTICAL ELECTROCARDIOGRAPHY. By Henry J. L. Marriott, M.D., Associate Professor of Medicine, University of Maryland; Chief, Electrocardiograph Department, Mercy Hospital, Baltimore. Ed. 2. Cloth. Pp. 226, with illustrations. Price $5.00. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

The author's aim is to provide a simple yet comprehensive approach to clinical electrocardiography. This second edition has been meticulously revised and a number of selected references have been included, chosen for both their value and accessibility.

The proximity of illustrations and descriptive text should prove particularly helpful to both student and clinician.

▶ DRUGS. Their Nature, Action and Use. By Harry Beckman, M.D., Director, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry; Consulting Physician, Milwaukee County General Hospital and Columbus Hospital. Cloth. Pp. 728, with illustrations. Price $15.00. W. B. Saunders Company, W. Washington Square, Philadelphia 5, 1958.

This is a textbook for the student who can devote but a brief period to preparation for the pharmacologic aspects of his future practice. It meets the need for a book that will serve to supplement his studies in the laboratory and in lecture and conference rooms.

Section I, "A Justification of Pharmacology and Pharmacologists," briefly relates pharmacology to the other preclinical disciplines. Section II, "The Nature of Drugs," presents the broad background of the science of pharmacology and an exposition of the bases from which advances are made. Section III, "The Actions and Uses of Drugs," comprises the major part of the text; it offers combined discussions of the actions and uses of drugs in an arrangement designed for direct serviceability from the pharmacotherapeutic standpoint.

The bibliographies, while not exhaustive, should serve as excellent guides into the literature on pharmacology. The index, considerably detailed and readily usable, should be extremely helpful. The inside covers contain a chart of infectious diseases and the pharmacologic agent preferred for each.

▶ ANATOMIES OF PAIN. By K. D. Keele, M.D., F.R.C.P., Consultant Physician, Ashford Hospital and Staines Hospital. Cloth. Pp. 206, with illustrations. Price $5.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

It is only in recent years that pain has emerged as a separate clinical problem, although it has been acknowledged as part of disease from the dawn of civilization.

This book purports to show how the changing concepts of the anatomic and physiologic basis of pain have flowed as a continuous process from the most ancient medicine until the present day. The author points out the necessity of realizing that ideas can be fruitful only if they are produced at the right time, "when there is sufficient contextual background to support them." The book contains examples of ideas that never reached the status of discovery, and the reasons for their failure. Some, according to the author, have achieved success already; others await it.

Present-day workers on the problem of pain will value this book for its useful background material. The illustrations, particularly the historical figures, are notable.

▶ A TEXTBOOK OF PHARMACOGNOSY. By George Edward Trease, B.Pharm., D. de l'U., F.P.S., F.R.I.C., F.L.S., Professor of Pharmacognosy, Director of Pharmaceutical Studies and Head of the Department of Pharmacy in the University of Nottingham; Joint author of "The Chemistry of Crude Drugs." Ed. 7. Cloth. Pp. 808, with illustrations. Price $8.50. The Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

This seventh edition of a well-known textbook of pharmacognosy reflects the considerable changes that have taken place in all fields of pharmaceutical study. Even though the botanical side of pharmacognosy retains its importance, the book gives increased attention to the constituents of drugs and to the physical and chemical methods for their evaluation. Because of the

trend toward internationalism in pharmacal education and practice, the author has endeavored to increase the text's usefulness to American readers.

A new appendix summarizes the drugs from each plant family and lists the official works in which these drugs appear. The illustrations are numerous and interesting.

▶ **EAR, NOSE AND THROAT DYSFUNCTIONS DUE TO DEFICIENCIES AND IMBALANCES.** By Sam E. Roberts, M.D., Associate Professor of Otolaryngology, University of Kansas School of Medicine; Attending and Chief of the Section of Otolaryngology, The Research Hospital and The Research Clinic, Kansas City, Missouri. Cloth. Pp. 323, with graphs. Price $8.50. Charles C Thomas, Publisher, 301-327 East Lawrence Avenue, Springfield, Ill., 1957.

In this volume, a distinguished otolaryngologist records his extensive clinical experiences in the total approach to diagnosis and management of dysfunctions about the head. To illustrate the efficacy of his constitutional viewpoint, he cites many reports from his years of study and practice in this field of medicine.

The author points to cellular nutrition and metabolism, rather than to virulence and toxicity of the micro-organism, as the most important factor in disease and dysfunction. He also takes into account the vital character of glandular activities and the relationship between glandular difficulties and dietary problems.

The work should prove of value to any clinician who studies the patient as a whole human being rather than as a mechanism that responds in various ways to treatment based on a variety of laboratory determinations.

Dr. Roberts' style is simple and authoritative. Many charts and graphs add to readability of his text.

▶ **A TEXTBOOK OF CLINICAL NEUROLOGY.** With an Introduction to the History of Neurology. By Israel S. Wechsler, M.D., Consulting Neurologist, The Mount Sinai Hospital, New York. Ed. 8. Cloth. Pp. 782, with illustrations. Price $11.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1958.

The eighth edition of a widely accepted textbook on clinical neurology remains true to its original purpose. It gives scholarly and experienced consideration to practically all neurologic problems that confront the student and practicing physician.

Like its predecessors, this edition is based on the conviction that sound clinical observation and accurate diagnostic correlation of signs and symptoms will always comprise the basis of the scientific practice of neurology.

Included are many important advances made in the past 5 years. New facts and new syndromes have been added, and much of the text has been rewritten. It keeps, however, to the author's original plan of presenting the signs and symptoms of various diseases as growing out of the anatomicopathologic substratum and consequent upon the underlying physiologic disturbance. Brief paragraphs outline the anatomic and pathologic facts upon which the subsequent description of the clinical evidence is based.

This edition is divided into five parts: Methods of Examination, The Spinal Cord, The Peripheral Nerves, The Brain, and Neuroses. Students and physicians should find the book most usable.

▶ **PRACTICAL PEDIATRICS.** By R. Cannon Eley, M.D., Assistant Clinical Professor of Pediatrics, Harvard University, Cambridge, Mass.; Chief Pediatric Service, Mount Auburn Hospital, Cambridge, Mass.; Senior Consultant Pediatrics, U.S. Naval Hospital, Chelsea, Mass.; and Benjamin Kramer, M.D., Director of Pediatr. Services, Maimonides Hospital, Brooklyn, New York; Clinical Professor of Pediatrics (Emeritus), University of the State of New York, Downstate Med. Center; Pediatr. Consultant, The Jewish Hospital, Brooklyn, New York. Cloth. Pp. 309, with illustrations. Price $7.00. McGraw-Hill Book Company, 330 West 42nd St., New York 36, 1958.

Care of children is the job of every general practitioner. It is he who daily sees children with afflictions ranging from small bruises to serious diseases like rheumatic fever. Medications and therapies for a child are frequently different from those for adults; therefore, a book that contains basic information about pediatrics in a compact form is a worthwhile addition to the medical library of the busy practitioner. As stated in the preface, "The purpose of this book is to . . . present those aspects of pediatrics which are most likely to challenge the practitioner in his everyday practice."

Drs. Eley and Kramer, both well-qualified pediatricians, have presented a great amount of useful clinical information. Among the diseases discussed are epilepsy, leukemia, diabetes, and poliomyelitis. Other chapters are devoted to immunization, poisoning, fluid and electrolyte balance, and antibiotics.

▶ **THE ILLUSTRATED BIRTH CONTROL MANUAL.** By Valeria Hopkins Parker, M.D., Charter Member, American Association of Marriage Counsellors; Author of *For Daughters and Mothers.* Cloth. Pp. 392, with illustrations. Price $5.00. Cadillac Publishing Company, Inc., 220 Fifth Ave., New York 1, 1957.

The need for advice on birth control methods is general. Not only married couples seek advice, but engaged couples also have many questions regarding family planning which should be answered in a premarital consultation. It is a doctor's responsibility to give reliable and scientifically sound information in understandable language so that those who come to him are truly helped. This manual is surely one of the most comprehensive volumes on the subject and would be a great help to any physician in making such explanations.

Every tested method of birth control found practical by modern medical science is discussed and illustrated with 178 plates, many in full color. Topics include reasons for birth control, premarital consultation, male and female sex organs, and the sex act. A separate section is devoted to each method of birth control—mechanical, chemical, natural, biological, and sterilization—with particularly thorough discussions of the most common methods, such as diaphragm-jelly, condom, and rhythm. Case histories demonstrate the importance of birth control for physical and psychologic health.

This lucid book may be prescribed for lay persons, where that is permitted by law. Of particular value to such readers is the glossary of terms frequently used in discussions of birth control.

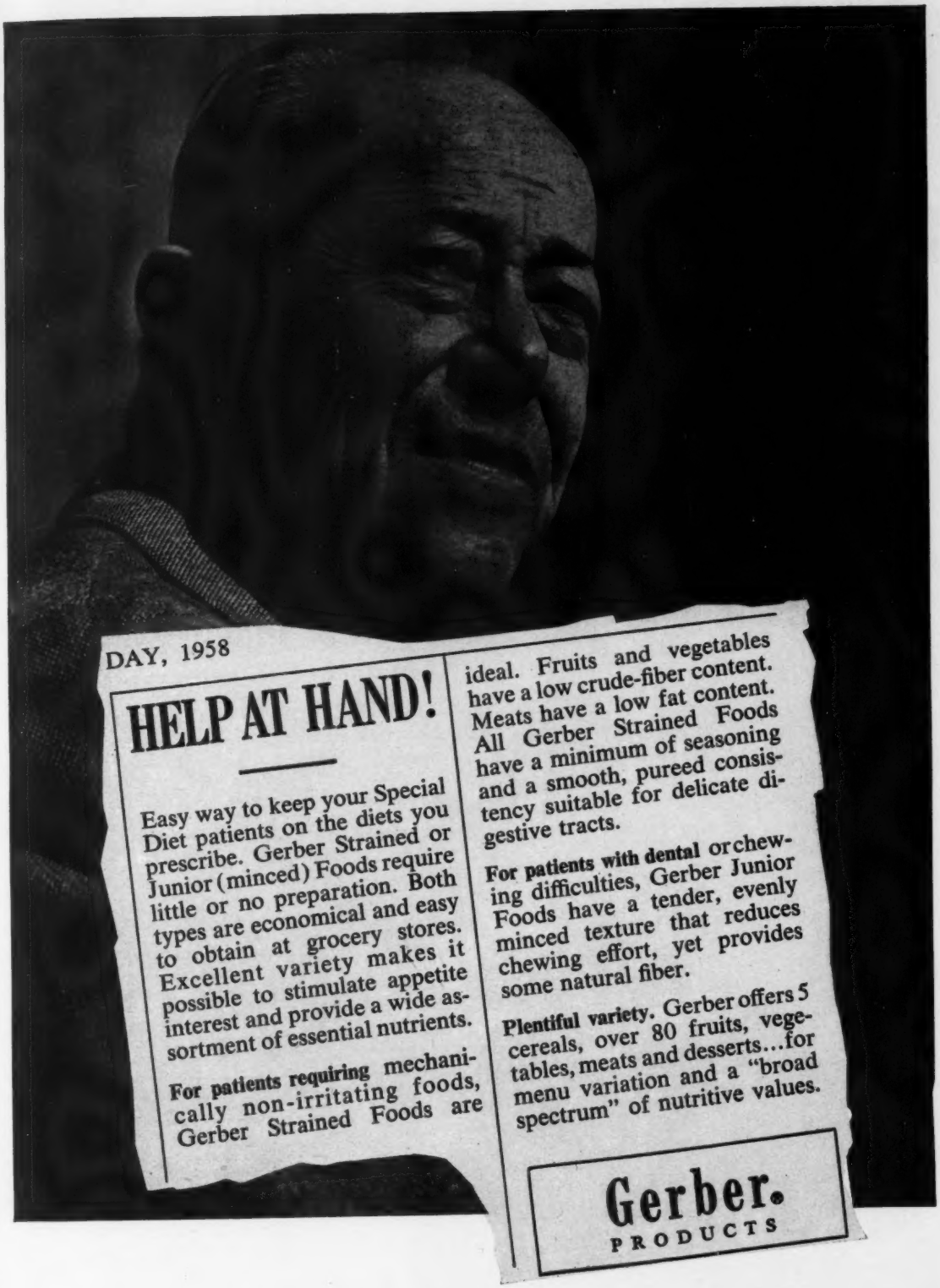
▶ **BASIC PHARMACOLOGY FOR NURSES.** By Jessie E. Squire, B.A., R.N., M.Ed., Instructor, Hayward-Fairmont School of Vocational Nursing, Hayward Adult and Technical School, Hayward Union, High School District, Hayward, California. Paper. Pp. 265. Price $3.50. The C. V. Mosby Company, 3207 Washington, Blvd., St. Louis 3, 1957.

The purpose of this book is to give nurses and student nurses a correlation of theory and fact concerning medicine and drugs and to acquaint them with practices in administration of drugs. It is designed to help them understand their responsibility in the administration of medicine and to appreciate the necessary limitations imposed on nurses in this function.

It includes basic information concerning the main effects, uses, and doses of the common drugs, together with weights, measurements, and abbreviations commonly used in medicine. It also gives directions for the use of tuberculin, insulin, and other syringes.

▶ **DIGITALIS.** Compiled and Edited by E. Grey Dimond, M.D., Professor and Chairman, Department of Medicine; Director, Cardiovascular Laboratories, University of Kansas Medical Center, Kansas City, Kansas. Cloth. Pp. 255, with graphs. Price $7.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

The thirteen contributors to this volume are representative of those working presently in the field of cardiovascular diseases in the United States. The individual papers and panel discussions are oriented toward the practical, applied use of the drug and its pharmacologic background. The volume offers a comprehensive view of today's knowledge of digitalis; it encompasses present concepts of the use of this ancient drug; ideas of dosage, treatment of intoxication, and the preparations of choice.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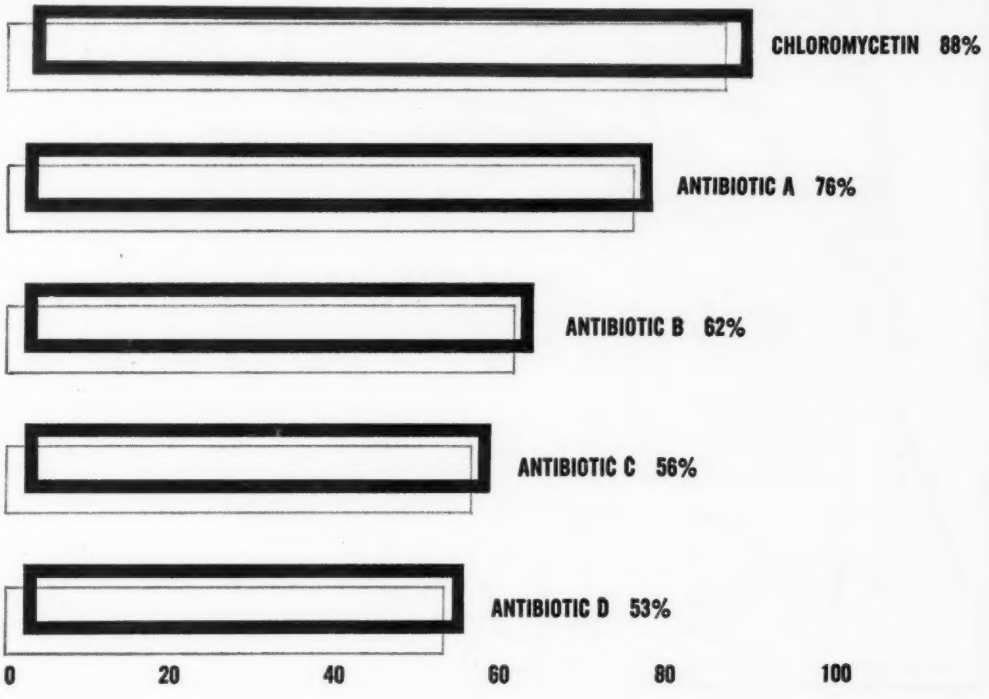

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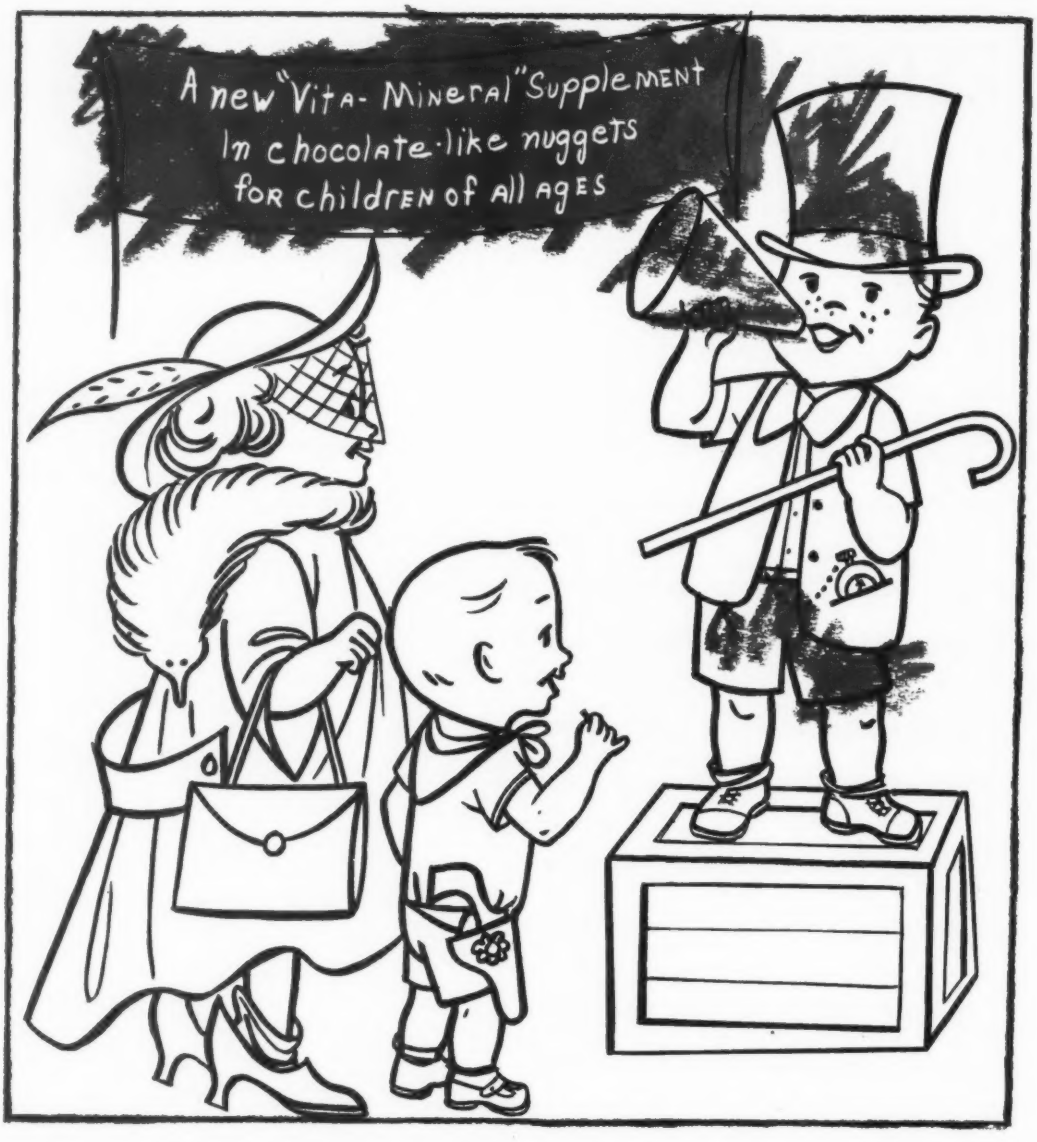

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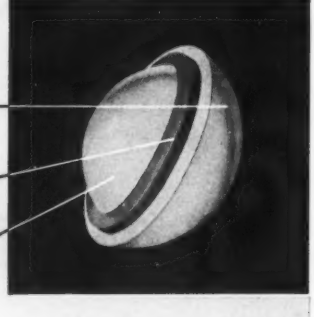

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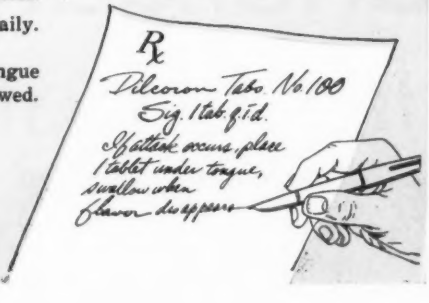

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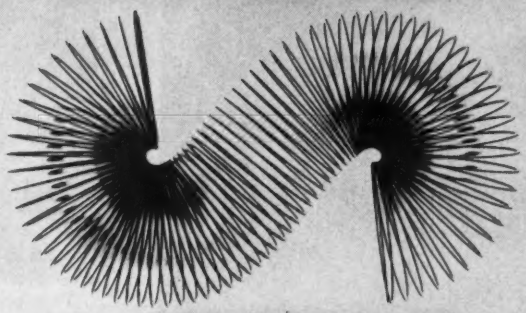

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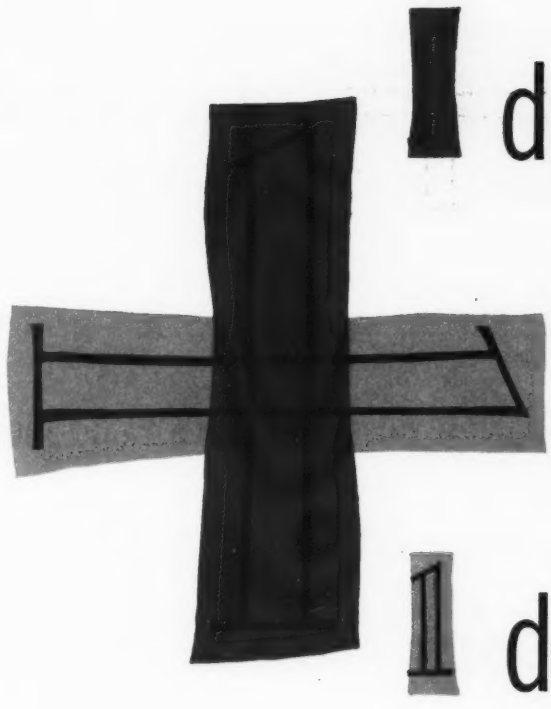

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[1] Feinblatt, T. M., Feinblatt, H. M., and Ferguson, E. A., *Am. J. Digest. Dis. 22:5, 1955.*

[2] Sollmann, T., *Manual of Pharmacology*, 8th ed., 1957, p. 1121.

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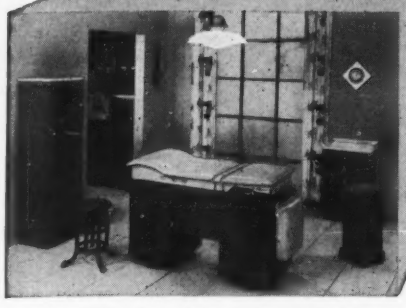

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Published annually under the direction of the Council on Drugs of the A.M.A. Describes drugs evaluated by the Council. Covers all essential information on new drugs—official and nonofficial. A recognized standard authority providing quick reference to composition, indication and contraindications. Describes composition including chemical formula, actions, uses, dosage, available preparations. Applicable commercial names are listed to speed prescription and identification.

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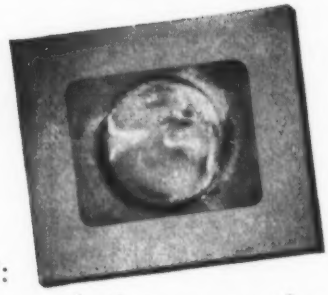

THE PATIENT'S COMPLAINT:

stubborn trichomoniasis

THE PRESCRIPTION:

eradication by

explosion

MORE and more physicians have found that vaginal trichomoniasis resistant to many types of medication is quickly and easily eradicated by VAGISEC liquid and jelly.[1,2] This is good news for patients who have long suffered from annoying leukorrhea, pruritus and burning. All of Decker's[1] patients obtained "immediate relief of acute symptoms" with the very first office treatment, and 97% were "cured."

As seen in the majority of Decker's patients, only three to four weeks of treatment were necessary. Negative results usually follow three successive menstrual cycles and constitute a "cure."

The reason for this success is the powerful, penetrating action of VAGISEC liquid which reaches every crevice of the vaginal rugae and dissolves albuminous secretions to reach the hidden trichomonads. Within *15 seconds* of contact, they are exploded. This total destruction is caused by the wetting, detergent and chelating agents in VAGISEC liquid which weaken the cell membranes, remove waxes and lipids, and denature the proteins. The Davis technique, emphasizing continuous, 'round-the-clock therapy with both VAGISEC liquid and jelly, eradicates trichomonads and gives them no possible chance to reappear.

VAGISEC®
liquid and jelly

References: 1. Decker, A.: New York J. Med. *57*:2237 (July 1) 1957. 2. Davis, C. H.: West. J. Surg. *63*:53 (Feb.) 1955.

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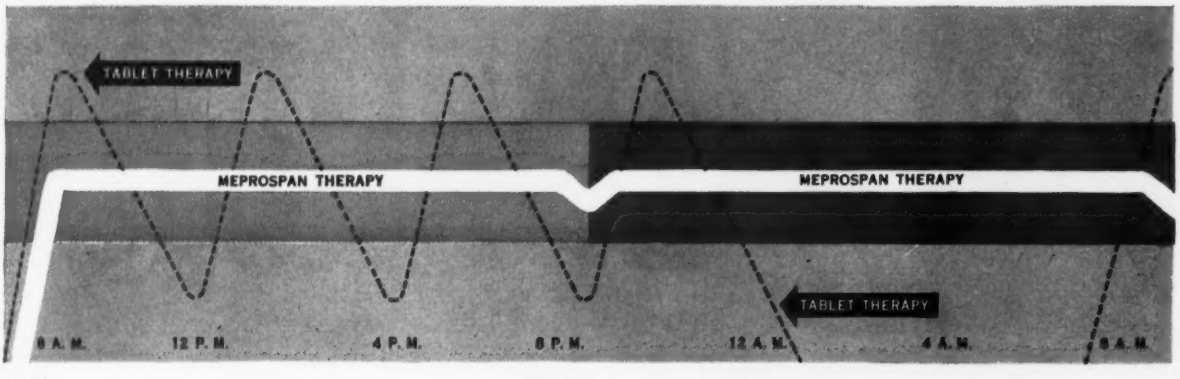
VAGISEC is a registered trade-mark of Julius Schmid, Inc.

New... meprobamate prolonged release capsules

Evenly sustain relaxation of mind and muscle 'round the clock



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- maintains constant level of relaxation
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- **BRONCHIAL ASTHMA, ALLERGIC DISORDERS**
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KENACORT

- far less gastrointestinal distress
- safe to use in asthma with associated cardiac disease; no sodium and water retention
- does not produce secondary hypertension—low salt diet not necessary
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- often works when other glucocorticoids have failed
- and on a lower daily dosage range

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Initial dosage: 8 to 20 mg. daily. After 2 to 7 days gradually reduce to maintenance levels.
See package insert for specific dosages and precautions.
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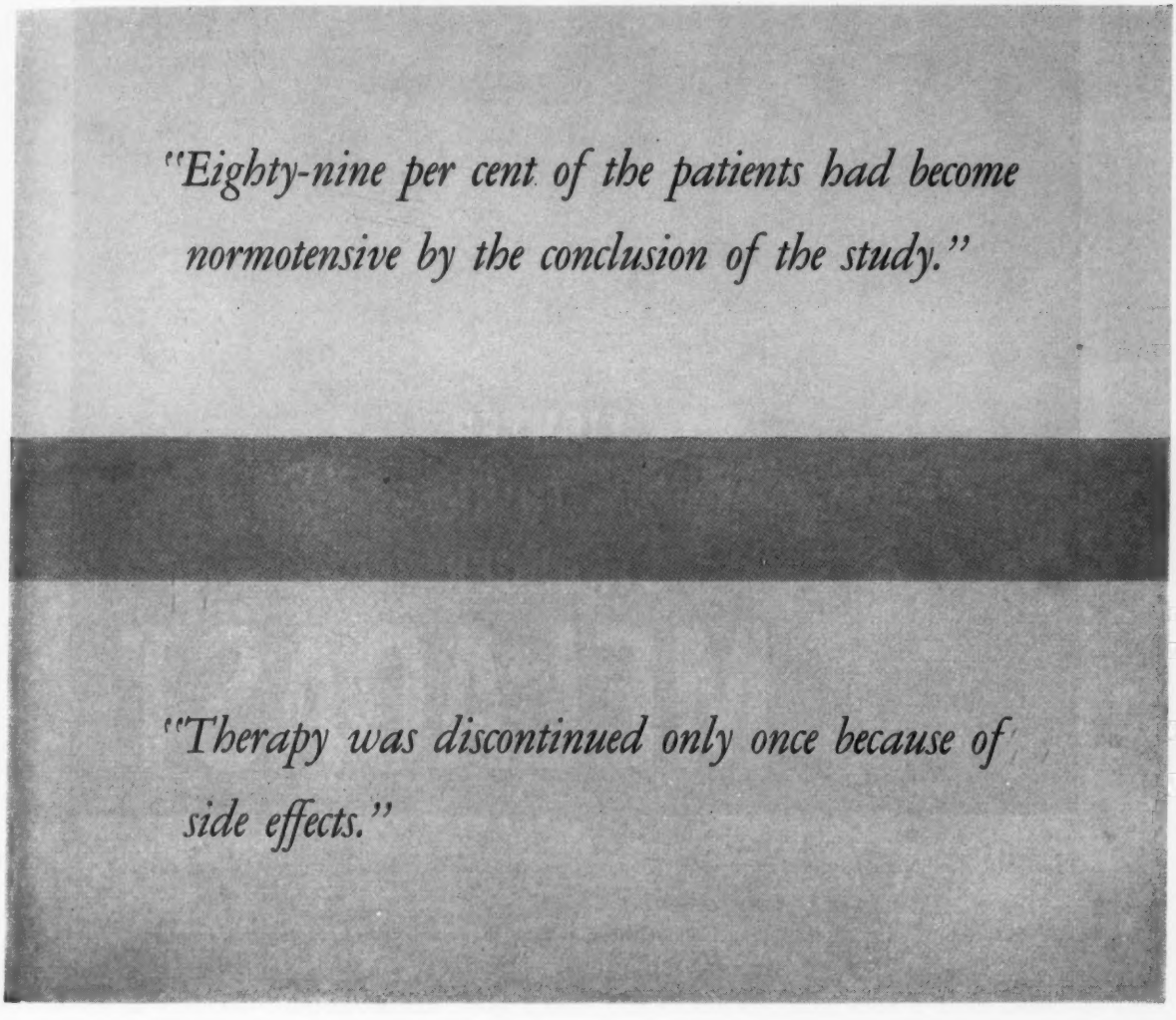
From a recent study on 'Mio-Pressin' in 65 hypertensive patients[1]


"Eighty-nine per cent of the patients had become normotensive by the conclusion of the study."
"Therapy was discontinued only once because of side effects."

Mio-Pressin*

—a balanced combination of rauwolfia, protoveratrine and Dibenzyline†—is particularly indicated in moderately severe to severe hypertension. Available in two dosage strengths.

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1. Smith, C.W., and Thomas, C.G.: Am. Pract. & Digest Treat. 8:920 (June) 1957.

*T.M. Reg. U.S. Pat. Off.
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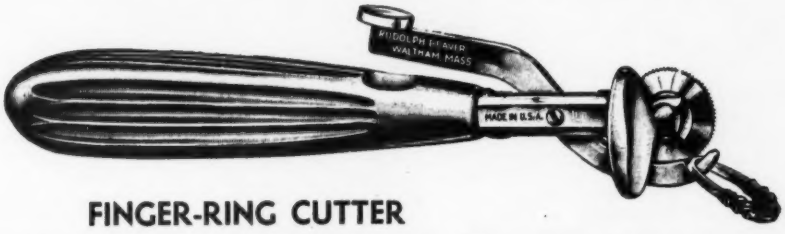

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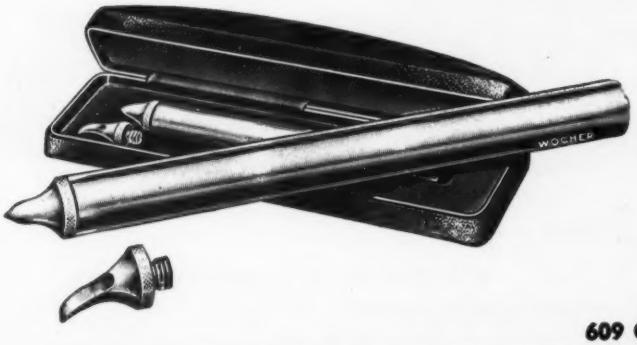
A badly burned hand with blistered, burned flesh covering a finger-ring can be more than a minor incident. This cutter works simply, easily and efficiently. It's worth its weight in gold in an emergency. Don't wait and say "I wish I had—" Order one today—only **$9.50**



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Eye Magnet

Strongest permanent magnet made. Remove steel or iron fragments from the eye in a jiffy. Point and scraper tips interchangeable. In fitted, shielding case—**9.50**

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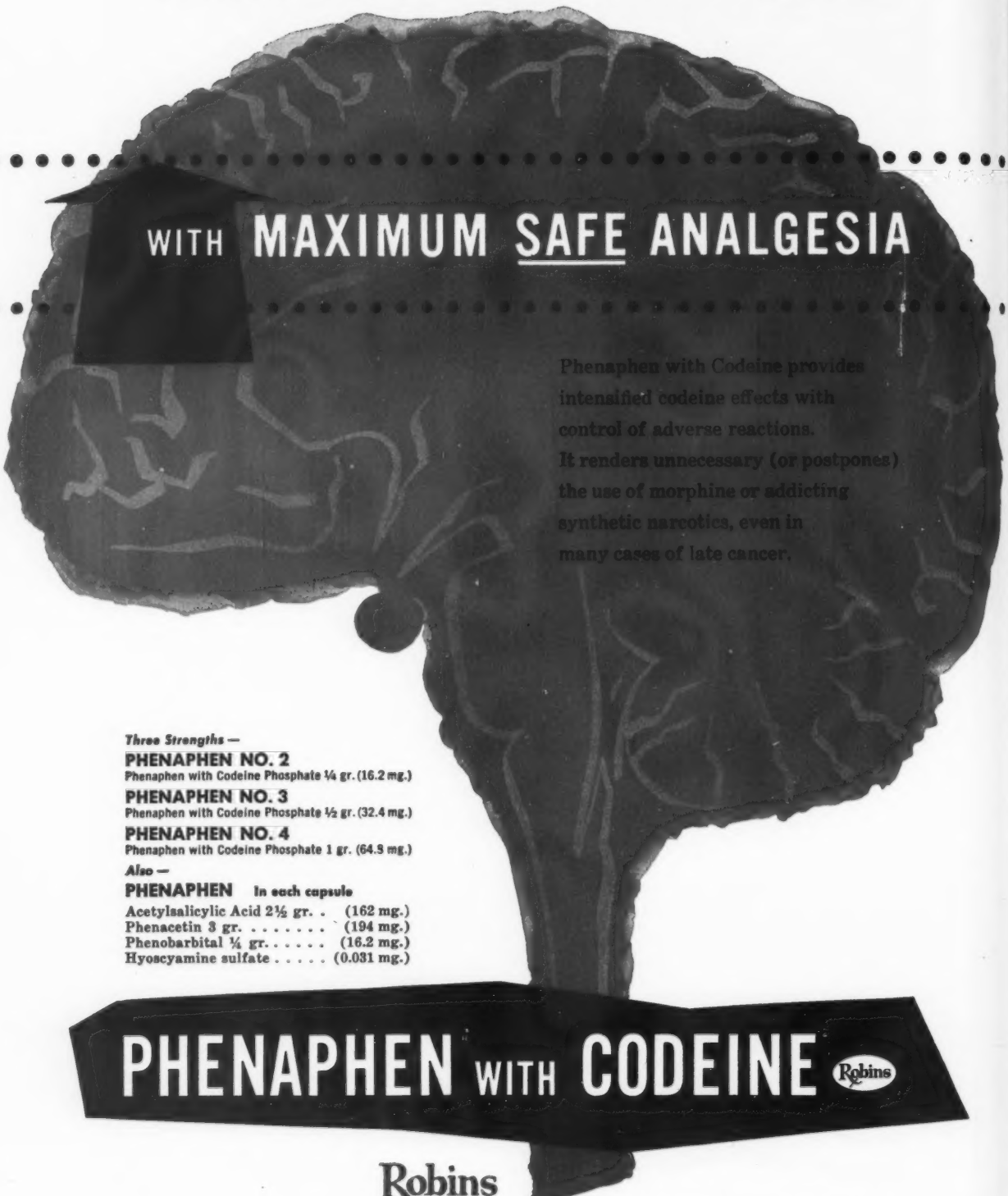
Raise the Pain Threshold

WITH MAXIMUM SAFE ANALGESIA



Phenaphen with Codeine provides intensified codeine effects with control of adverse reactions. It renders unnecessary (or postpones) the use of morphine or addicting synthetic narcotics, even in many cases of late cancer.

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Other tranquilizers added to PN's g. i. discomfort (he has ulcers). But now his doctor has him on ATARAX because (+) it lowers gastric secretion while it tranquilizes.

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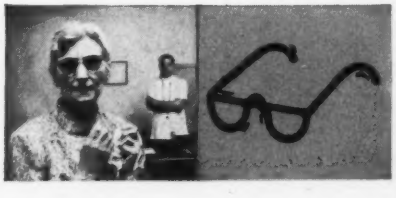

Senile anxiety and persecution complex dogged Mrs. K. until her doctor prescribed ATARAX Syrup. (+) It tastes good, and it's a perfect vehicle for Mrs. K's tonic.

Dosage: Children, 1-2 *10 mg.* tablets or 1-2 tsp. Syrup t.i.d. Adults, one *25 mg.* tablet or 1 tbsp. Syrup q.i.d.

Supplied: 10, 25 and 100 mg. tablets, bottles of 100. Syrup, pint bottles. Parenteral Solution, 10 cc. multiple-dose vials.

...ATARAX gives you an extra benefit

(BRAND OF HYDROXYZINE)

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new...
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wide-range nitrofuran controls
the "problem pathogens" of

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LIQUID

antibacterial
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A finely divided suspension containing Furoxone, 50 mg. per 15 cc., with kaolin and pectin ■ Pleasant orange-mint flavor ■ For patients of all ages (may be mixed with infant formulae; passes through a standard nursing nipple).

■ Perorally effective against a wide range of enteric bacteria[1,2]— including common pathogenic species and strains of Escherichia, Salmonella and Staphylococcus not adequately controlled by antibiotics and sulfonamides.

■ Bactericidal rather than bacteriostatic.

■ Does not induce development of significant bacterial resistance, nor predispose to monilial or staphylococcal overgrowth.

■ No toxicity reported.
Mild sensitization, nausea, emesis occur occasionally.

Supplied in bottles of 240 cc.
Also available: FUROXONE Tablets, 100 mg. scored, bottles of 20 and 100.

1. Ponce de Leon, E.: Antibiotic Med. & Clin. Therapy 4:816, 1957.
2. H. W. McFadden and M. M. Musselman: Personal communication to Eaton Laboratories.

NITROFURANS A unique class of antimicrobials Products of Eaton Research

Eaton Laboratories, Norwich, New York

First Logical Addition

First with the Citrus Bioflavonoids in this field,
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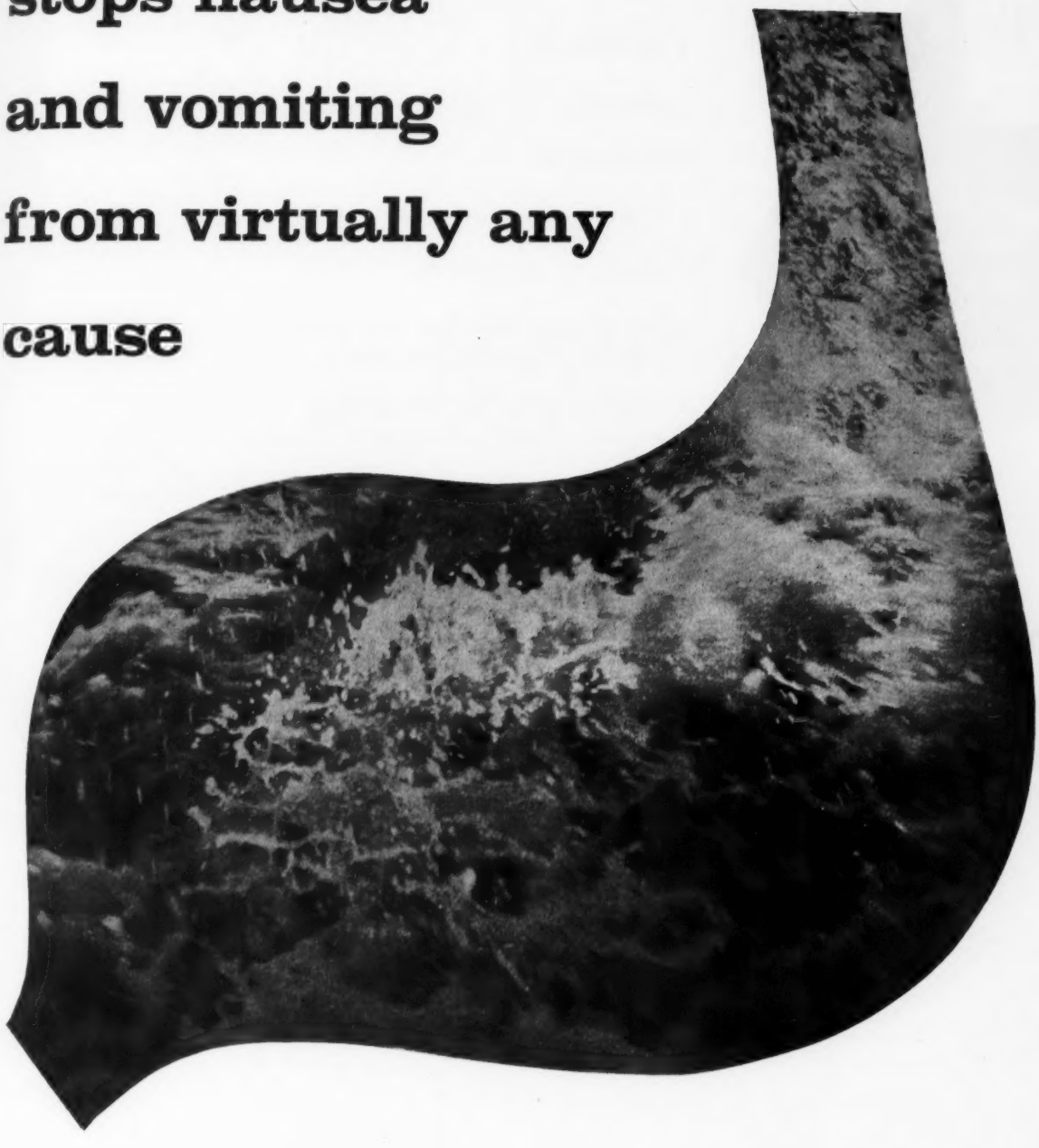
stops nausea and vomiting from virtually any cause



New: Multiple dose vials for immediate effect—always carry one in your bag

Also available: Tablets, Ampuls, Spansule® sustained release capsules, Syrup and Suppositories

Compazine★

the specific for nausea and vomiting

Smith Kline & French Laboratories, Philadelphia

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WHEN YOU TREAT INFECTIONS IN PATIENTS SUCH AS THESE

- debilitated
- elderly
- diabetics
- infants, especially prematures
- those on corticoids
- those who developed moniliasis on previous broad-spectrum therapy
- those on prolonged and/or high antibiotic dosage
- women—especially if pregnant or diabetic

the best broad-spectrum antibiotic to use is

MYSTECLIN-V

Squibb Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin) — Sumycin plus Mycostatin

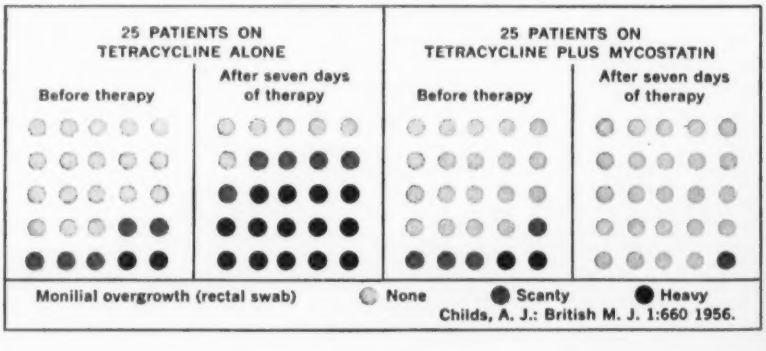
for practical purposes, Mysteclin-V is sodium-free

for "built-in" safety, Mysteclin-V combines:

1. Tetracycline phosphate complex (Sumycin) for superior initial tetracycline blood levels, assuring fast transport of adequate tetracycline to the infection site.

2. Mycostatin—the first safe antifungal antibiotic—for its specific antimonilial activity. Mycostatin protects many patients (see above) who are particularly prone to monilial complications when on broad-spectrum therapy.

MYSTECLIN-V PREVENTS MONILIAL OVERGROWTH



Childs, A. J.: British M. J. 1:660 1956.

Capsules (250 mg./250,000 u.), bottles of 16 and 100. *Half-Strength Capsules* (125 mg./125,000 u.), bottles of 16 and 100. *Suspension* (125 mg./125,000 u.), 2 oz. bottles. *Pediatric Drops* (100 mg./100,000 u.), 10 cc. dropper bottles.

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'MYSTECLIN,'® 'MYCOSTATIN',® AND 'SUMYCIN' ARE SQUIBB TRADEMARKS

Carving Carol's in nutritional peril!

*"Such heavenly apples!" (Peel, snip) "And peaches, my!" (Scrape, gouge) And on it goes, from carrot to cucumber. Snap, pick, slash, scrub. By the time she's through, she'll have the cleanest food in town . . . and avitaminosis. Another perfect candidate for DAYALETS. 10 important vitamins in each tiny Filmtab. Now in the Raymond Loewy-designed Tablet Bottle.** Abbott

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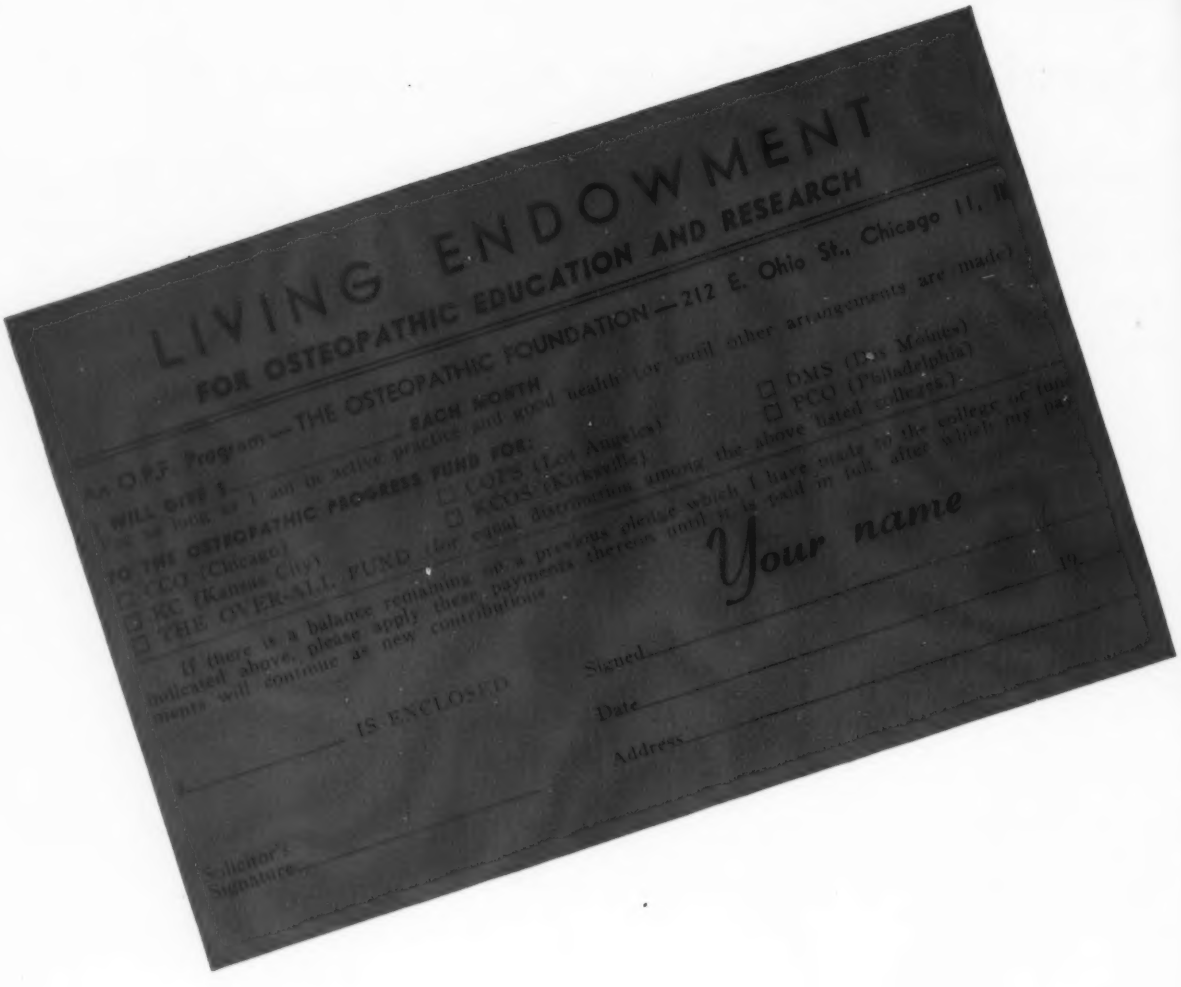
®Filmtab—Film-sealed tablets, Abbott; pat. applied for.

*For the added pleasure and convenience of your patients DAYALETS now come in the graceful new table bottle, designed by Raymond Loewy. Capped and ringed in gold.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in asthma when emotional stress is a complicating factor

'Thorazine' by injection (ampuls or multiple dose vials) often provides immediate relief from severe attacks.

'Thorazine' Spansule† capsules q12h provide sustained, 24-hour protection against emotional stress that can precipitate attacks.

'Thorazine', in any dosage form, promotes sound sleep without respiratory depression.

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chlorpromazine, S.K.F.

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MUMPS GLOBULIN
for immediate prevention
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Supplied:
Mumps Immune Globulin
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1.5 cc—child size
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no asthma symptoms

. . . thanks to Tedral prescribed by her physician.

No single drug can equal Tedral to protect

the asthmatic patient against symptoms 'round the clock.

Dosage: 1 or 2 tablets q.i.d. Available: boxes of 24, 120 and 1,000.

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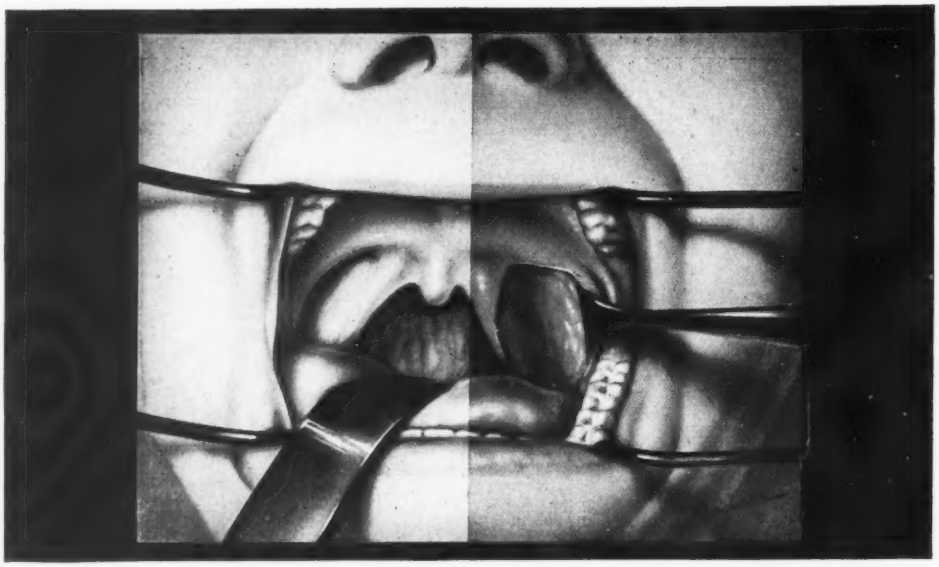

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"A BACTERIOSTATIC BATH"*

Controls Oropharyngeal Infections and Relieves Discomfort Quickly

Chewing ORABIOTIC releases a soothing flow of saliva laden with two locally potent and complementary antibiotics—*neomycin and gramicidin*—plus a topical analgesic, *propesin*, which is more effective than benzocaine.

NON-SENSITIZING AND NON-IRRITATING.

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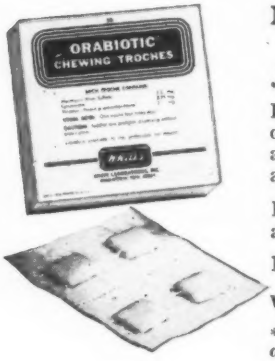

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for topical treatment or prophylaxis

For the relief of postoperative discomfort and the prevention of secondary hemorrhage following tonsillectomy. Valuable also as a topical adjunct to systemic treatment of bacterial infections of the mouth and throat.

EACH TROCHE CONTAINING: neomycin 3.5 mg., gramicidin 0.25 mg., and propesin 2.0 mg.

IN PACKAGES OF 20. One troche chewed for 10-15 min. q. 4h.

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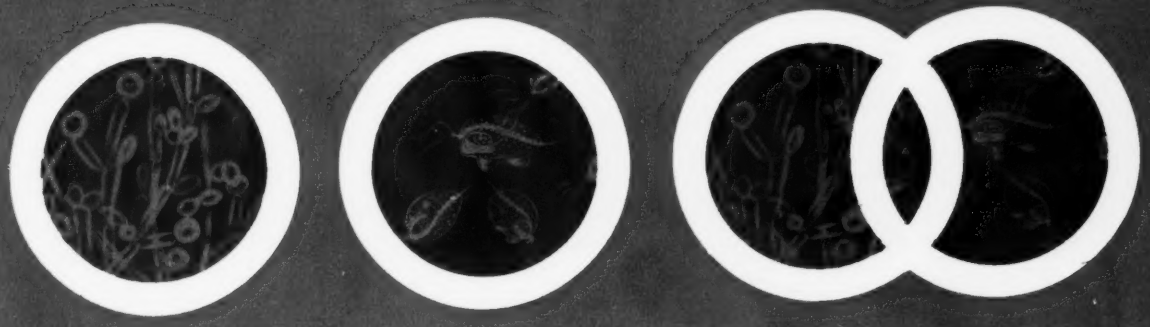
**Granberry, C., and Beatrous, W. P.: The Effect of an Antibiotic Chewing Troche on Post-Tonsillectomy Morbidity, E. E. N. T. Monthly (May) 1957.*

for vaginal moniliasis, trichomoniasis or both



a new specific **moniliacide** MICOFUR™ brand of nifuroxime is combined with the established specific **trichomonacide** FUROXONE® brand of furazolidone in

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VAGINAL SUPPOSITORIES AND POWDER

85% CLINICAL CURES* In 219 patients with either trichomonal vaginitis, monilial vaginitis, or both, clinical cures were secured in 187.

71% CULTURAL CURES* 157 patients showed negative culture tests at 3 months' follow-up examinations.

Simple two-step treatment swiftly brings relief and control of vaginal moniliasis and trichomoniasis.

STEP 1 *Office* administration of TRICOFURON VAGINAL POWDER IMPROVED Applied by the physician at least once a week, except during menstruation.

(Micofur 0.5% [*anti* 5-nitro-2-furaldoxime], the new nitrofuran fungicide, and Furoxone 0.1% in an acidic, water-soluble powder base). Plastic insufflator of 15 Gm., with 3 sanitary disposable tips. Also glass bottle of 30 Gm.

STEP 2 Continued *home* use to maintain moniliacidal-trichomonacidal action: TRICOFURON VAGINAL SUPPOSITORIES IMPROVED Employed by the patient each morning and night the first week and each night thereafter—through one cycle, especially during the important menstrual days.

(Micofur 0.375% and Furoxone 0.25% in a water-soluble base) NEW: Box of 24 bullet-shaped suppositories, each hermetically sealed in green foil; with applicator. Box of 12 wedge-shaped suppositories without applicator.

*Combined results of 12 clinical investigators. Data available on request.

NITROFURANS—a *new* class of antimicrobials—neither antibiotics nor sulfonamides

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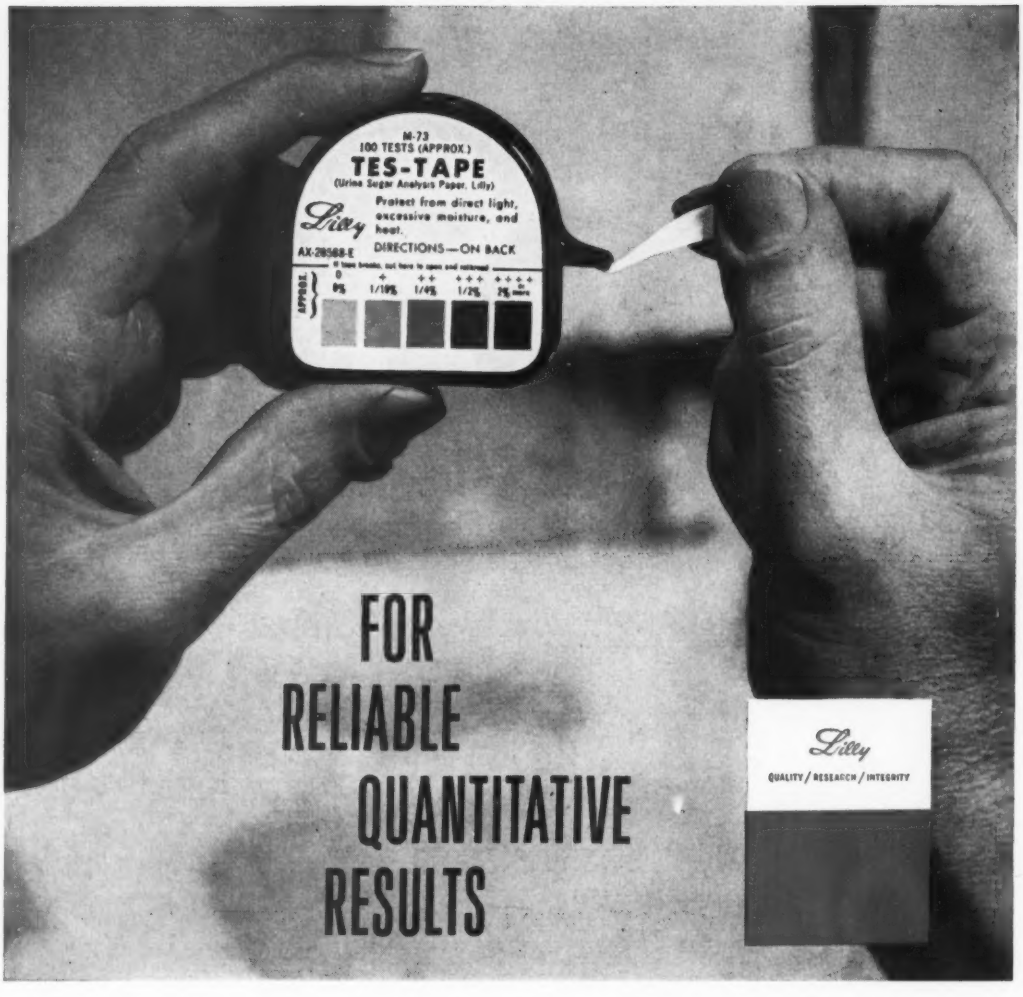

routine checks verify clinical accuracy

Every lot of 'Tes-Tape' (Urine Sugar Analysis Paper, Lilly) is subjected to a panel of ten persons at the Lilly Research Laboratories who are unfamiliar with the use of 'Tes-Tape.' Each panel member examines twenty-five urine specimens containing different concentrations of glucose. When last computed, the average accuracy of the observations at the designated levels was as follows:

Glucose Concentration	Accuracy
2 percent	98.6 percent
0.5 percent	88.9 percent
0.25 percent	90.3 percent
0.1 percent	95.6 percent
0 percent	100 percent

A total of 5,500 different specimens were assayed, with an over-all accuracy of 98.6 percent.

Available at all pharmacies in plastic dispensers of approximately 100 tests.

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Conventions and meetings

Announcements

American Osteopathic Association, Sixty-Second Annual Convention, Sheraton-Park and Shoreham Hotels, Washington, D.C., July 14-18. Program Chairman, Richard O. Brennan, 1115 W. Alabama St., Houston 6, Tex.

American College of Osteopathic Internists, annual meeting, Waldorf-Astoria Hotel, New York City, October 2-4. Program Chairman, H. Earle Beasley, 189 Bay State Rd., Boston 15, Mass. Secretary, Glennard E. Lahrson, 460 Staten Ave., Oakland 10, Calif.

American College of Osteopathic Surgeons, annual meeting, Statler Hotel, Boston, October 26-30. Executive Secretary, Mrs. E. F. Martin, Box 474, Coral Gables 34, Fla.

American Osteopathic Academy of Orthopedics, annual meeting, Statler Hotel, Boston, October 26-30. Secretary, J. Paul Leonard, 2673 W. Grand Blvd., Detroit 8, Mich.

American Osteopathic College of Anesthesiologists, annual meeting, Statler Hotel, Boston, October 26-30. Secretary, Crawford M. Esterline, Box 155, Kirksville, Mo.

American Osteopathic College of Proctology, annual meeting, Beach Club Hotel, Ft. Lauderdale, Fla., April 16-18. Program Chairman, Ralph W. Deger, 1121 Xenia Ave., Dayton 10, Ohio. Secretary, Eugene W. Egle, Lackland Clinic, 2335 Brown Rd., St. Louis 14.

American Osteopathic College of Radiology, annual meeting, Statler Hotel, Boston, October 26-30. Secretary, F. A. Turfler, Jr., South Bend Osteopathic Hospital, 2515 E. Jefferson Blvd., South Bend 15, Ind.

American Osteopathic Hospital Association, annual meeting, Statler Hotel, Boston, October 26-30. Executive Secretary, Mr. R. P. Chapman, 4000 Brady St., Davenport, Iowa.

Arizona, annual meeting, El Dorado Hotel, Tucson, May 4-6. Program Chairman, James B. Carson, 2813 S. Sixth Ave., Tucson. Executive Secretary, Mrs. Laura McRae, 4122 N. 19th Dr., Phoenix.

British, annual meeting, June 20-21. Secretary, Thurston True, Andrew Still House, 24-25 Dorset Sq., London N.W. 1.

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381 Eleventh St., San Francisco, Calif.

California, annual meeting, Senator Hotel, Sacramento, May 14-18. Program Chairman, Richard E. Eby, 1247 N. Park Ave., Pomona. Executive Secretary, Mr. Thomas C. Schumacher, 4775 Santa Monica Blvd., Los Angeles 29.

Colorado, annual meeting, Denver, May 3. Program Chairman, A. Hollis Wolf, 304 Carlton Bldg., Colorado Springs. Secretary, C. Robert Starks, 1459 Ogden St., Denver 18.

Eastern States Osteopathic Society of Proctology, annual meeting, Hotel DuPont, Wilmington, Del., November 1-2. Program Chairman, Terrell E. Cobb, 1379 Narragansett Blvd., Cranston 5, R.I. Secretary, LeRoy W. Lovelidge, Jr., 201 E. Orange St., Lancaster, Pa.

Georgia, annual meeting, Dinkler-Plaza Hotel, Atlanta, May 12-14. Program Chairman, Charles B. Wright, Tucker Hospital, Tucker. Executive Secretary, Mr. James C. Chappell, 3900 Bobolink Dr., Decatur.

Illinois, annual meeting, Palmer House, Chicago, April 24-26. Executive Secretary, Mr. Douglas O. Durkin, Room 521, 53 W. Jackson Blvd., Chicago 4.

Indiana, annual meeting, French Lick-Sheraton Hotel, French Lick, May 18-20. Program Chairman, Harold T.

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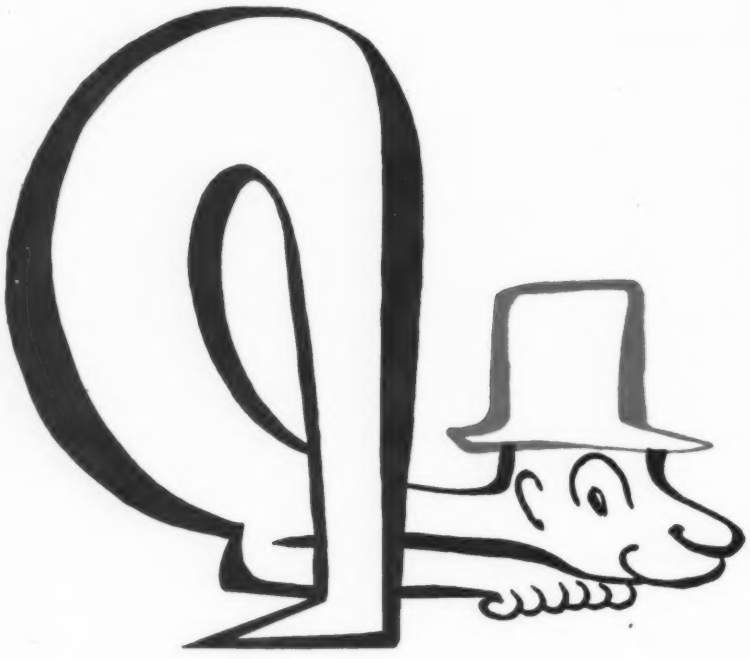

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Sparks, 2317 Washington Ave., Evansville 14. Secretary, Arabelle Baker Wolf, 4840 N. Michigan Rd., Indianapolis 8.

Iowa, annual meeting, Hotel Savery, Des Moines, May 25-27. Program Chairman, George W. Sutton, 511 E. Washington, Mount Pleasant. Secretary, Mr. Herman W. Walter, 200 Walnut Bldg., Des Moines 9.

Kansas, annual meeting, Broadview Hotel, Wichita, September 29-October 1. Program Chairman, Donald C. Ford, Mack-Welling Bldg., Lucas. Executive Secretary, Mr. Lloyd L. Hall, 121 E. 8th St., Topeka.

Kentucky, annual meeting, Brown Hotel, Louisville, June 11-12. Secretary, Martha Garnett, 2829 Brownsboro Rd., Louisville 6.

Louisiana, annual meeting, Lake Charles, October 23-25. Secretary, V. L. Wharton, Box 511, Lake Charles.

Maine, annual meeting, Samoset Hotel, Rockland, June 26-28. Program Chairman, Robert J. Meehan, 223 Main St., Rockland. Executive Secretary, Mr. George R. Petty, Monmouth.

Michigan, annual meeting, Civic Auditorium, Grand Rapids, October 6-8. Program Chairman, J. Malcolm MacCarson City Hospital, Carson City. Executive Secretary, Mr. Floyd E. Brooker, 81 Glendale, Highland Park 3.

Minnesota, annual meeting, Hotel Nicollet, Minneapolis, May 1-3. Program Chairman, Robert M. Plasch, 816 E. 38th St., Minneapolis 7. Secretary, E. R. Komarek, 301 Granite Exchange Bldg., St. Cloud.

National Osteopathic Child Health Conference and Clinic, Municipal Auditorium, Kansas City, Mo., April 21-23. Program Chairman, John M. Howard, 2105 Independence Blvd., Kansas City 24. Secretary, Luther W. Swift, 2105 Independence Blvd., Kansas City 24.

National Osteopathic Guild Association, annual meeting, A.O.A. Central Office, Chicago, November 14-15. Corresponding Secretary, Mrs. Robert Witta, Jr., 335 Wynwood Rd., York, Pa.

Nebraska, annual meeting, Fontenelle Hotel, Omaha, September 26-27. Executive Secretary, Mr. Robert H. Downing, Security National Bank Bldg., Superior.

New Mexico, annual meeting, Hilton Hotel, Albuquerque. April 13-16. Program Chairman, E. C. Bartlett, Jr., 118 Richmond Ave., N.E., Albuquerque. Secretary, Lory Baker, 400 N. Church St., Las Cruces.

New York, annual meeting, Hotel Statler, Buffalo, October 11-12. Program Chairman, Wesley C. Luther, 198 Union St., Hamburg. Secretary, C. Fred Peckham, 27 W. Bridge St., Oswego.

North Carolina, annual meeting, Battery Park Hotel, Asheville, October 23-25. Program Chairman-Secretary, S. Dales Foster, 710 Public Service Bldg., Asheville.

Northwest Osteopathic Convention, Olympic Hotel, Seattle, June 12-14. Program Chairman, Wilbert B. Saunders, 4730 University Way, Seattle 5.

Ohio, annual meeting, Neil House, Columbus, May 4-7. Program Chairman, A. R. Fuller, 201 S. Park Ave., Fremont. Executive Secretary, Mr. William S. Konold, 53 W. Third Ave., Columbus 1.

Ontario, annual meeting, Prince Edward Hotel, Windsor, May 1-3. Program Chairman, Norman W. Routledge, 15 Ursuline Ave., Chatham. Secretary, A. V. DeJardine, 205 Yonge St., Toronto 1.

Oregon: See Northwest Osteopathic Convention.

South Dakota, annual meeting, Drake Hotel, Watertown, June 1-2. Program Chairman, Lawrence L. Massa, 981 E. Main St., Sturgis. Secretary, Earl W. Hewlett, 417 W. 27th St., Sioux Falls.

Tennessee, annual meeting, Maxwell House, Nashville, April 27-30. Program Chairman, William H. Graves, Central Bldg., Bristol. Secretary, J. M. Moore, Jr., 200 High St., Trenton.

Texas, annual meeting, Texas Hotel, Fort Worth, May 1-3. Program Chairman, David Jaffe, 5509 Morningside Dr., Houston 5. Executive Secretary, Phil R. Russell, 512 Bailey St., Ft. Worth 7.

Utah, annual meeting, Boy Scout Service Center Auditorium, Logan, June 7-8. Program Chairman, Wilford G. Hale, 506 W. Second South, Logan. Secretary, Clarence E. Hyatt, 144 E. Fifth North St., Provo.

Vermont, annual meeting, Green Mountain Inn, Stowe, September 23-25. Program Chairman, J. Malcolm MacDonald, 3 S. Main St., Rutland. Clerk-treasurer, Marian N. Rice, 8 Court St., Windsor.

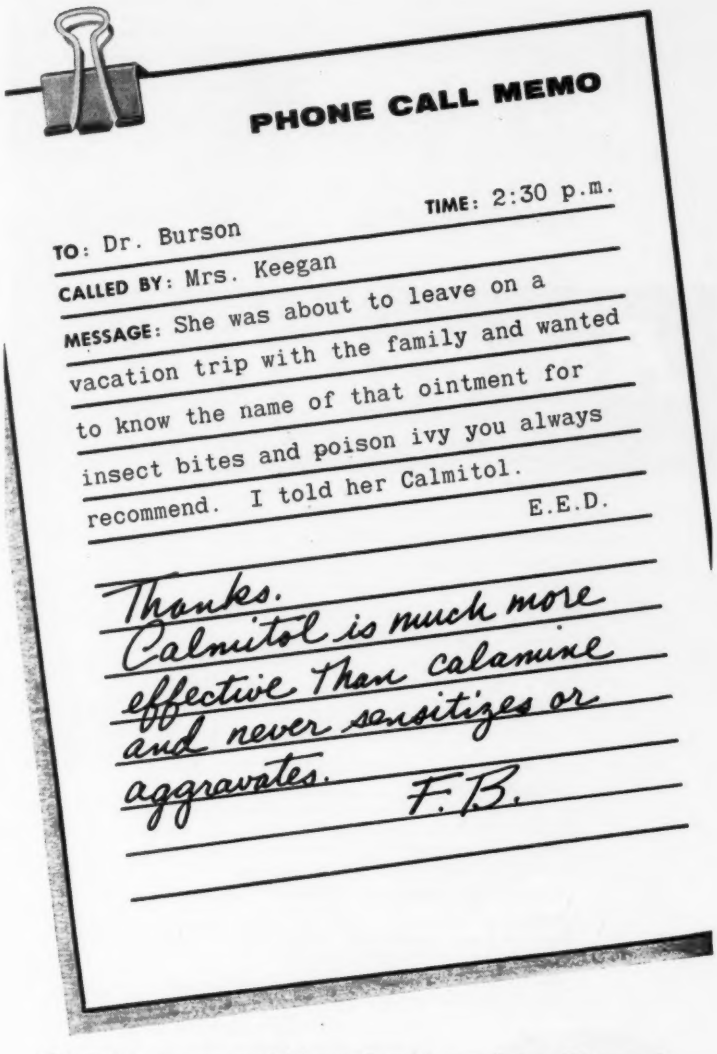
Virginia, annual meeting, Williamsburg Lodge, Williamsburg, May 22-24. Program Chairman, Felix D. Swope, 126 N. Columbus St., Alexandria. Secretary, John A. Cifala, 2778 N. Washington Blvd., Arlington.

Washington: See Northwest Osteopathic Convention.

West Virginia, annual meeting, Daniel Boone Hotel, Charleston, May 18-20. Program Chairman, Earl K. Lyons, Professional Bldg., Kerens Ave., Elkins. Secretary, Guy E. Morris, 542 Empire Bank Bldg., Clarksburg.

Western States Osteopathic Society of Proctology, annual meeting, Texas Hotel, Ft. Worth, Texas, October 6-8. Program Chairman, Clarence R. Woolsey, 118 Third St., Corpus Christi, Texas. Secretary, Earle F. Waters, 925 E. South Temple St., Salt Lake City 2, Utah.

Wisconsin, annual meeting, Wisconsin Hotel, Milwaukee, April 28-30. Program Chairman, Donald R. Bartingale, 403 S. Farwell St., Eau Claire. Secretary, Edwin J. Elton, 1518 N. 70th St., Wauwatosa 13.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TO: Dr. Burson
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CALLED BY: Mrs. Keegan
MESSAGE: She was about to leave on a vacation trip with the family and wanted to know the name of that ointment for insect bites and poison ivy you always recommend. I told her Calmitol.
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State and national boards

ALABAMA

Examinations June 24-26. Address D. G. Gill, M.D., secretary, Board of Medical Examiners, State Office Bldg., Montgomery 4.

ARIZONA

Those interested in professional examinations should contact Russell Peterson, D.O., secretary, Osteopathic Board of Registration and Examination in Medicine and Surgery, 2747 East McDowell Rd., Phoenix.

Basic science examinations June 17 at the University of Arizona, Tucson. Applications must be filed 2 weeks prior to examinations. Address Mr. Herman E. Bateman, secretary, Basic Science Board, University of Arizona, Tucson.

COLORADO

Professional examinations June 10-11 at Denver. Applications must be filed by May 9. Address Mrs. Beulah H. Hudgens, executive secretary, Board of Medical Examiners, 715 Republic Bldg., Denver 2.

Basic science examinations May 7-8 at second floor lecture room, Y.M.C.A. Building, E. 16th Ave. and Lincoln St., Denver. Applications must be filed by April 23. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 18.

CONNECTICUT

Professional examinations July 8. Address Frank Poglitsch, D.O., secretary, Osteopathic Examining Board, 300 Main St., New Britain.

Basic science examinations June 14. Address Miss M. G. Reynolds, executive assistant, Board of Healing Arts, 110 Whitney Ave., New Haven 10.

DELAWARE

Examinations July 8-10. Address Joseph S. McDaniel, M.D., Board of Medical Examiners, 229 S. State St., Dover.

FLORIDA

Professional examinations June 28-29

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In 264 patients, "Adrestat reduced the amount of local bleeding during the actual surgical procedure in tonsillectomies and adenoidectomies to a minimum and helped to provide a clean surgical field that facilitates the operative procedure."[1]

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1. Ryan, E. R.: A New Aid to Tonsil and Adenoid Surgery, *Clinical Medicine*, 5, 327 to 331, (March) 1958.

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at Deauville Hotel, Miami Beach. Applications must be filed prior to June 1. Address Thomas F. Sheffer, D.O., secretary, Board of Osteopathic Medical Examiners, Las Olas Hospital, 1516 E. Las Olas Blvd., Ft. Lauderdale.

Basic science examinations June 7 at Miami. Applications must be filed by May 7. Address M. W. Emmel, D.V.M., secretary, Board of Examiners in the Basic Sciences, P.O. Box 340, Gainesville.

GEORGIA

The officers of the Board of Osteopathic Examiners are Walter L. Jones, Rome, president; Hassie H. Trimble, Jr., Moultrie, vice president; and Hoyt B. Trimble, Atlanta, secretary. Dr. Hoyt Trimble and Harry Elkins Huff, Tifton, were recently reappointed to the Board.

Examinations July 1 at Atlanta. Address Mr. C. L. Clifton, joint secretary, State Examining Boards, State Capitol, Atlanta.

IDAHO

Examinations June 12 at Boise. Address Margaret Gilbert, Director, Occupational License Bureau, Department of Law Enforcement, State House, Boise.

ILLINOIS

Examinations in June at Chicago. Address Mr. Frederic B. Selcke, Superintendent of Registration, Department of Registration and Education, State House, Springfield.

IOWA

Basic science examinations July 8 at the Capitol Building, Des Moines. Address Elmer W. Hertel, Ph.D., secretary, Board of Basic Science Examiners, Wartburg College, Waverly.

KANSAS

Basic science examinations June 3-4 at Wahl Hall auditorium, University of Kansas Medical Center, Kansas City. Applications must be filed 30 days prior to examinations. Address Mr. Robert E. Stowell, secretary, Board of Basic Science Examiners, Kansas City 12.

MAINE

Examinations June 10-11 at Augusta. Address George F. Noel, D.O., secretary, Board of Osteopathic Examination and Registration, 20 Monument Square, Dover-Foxcroft.

MARYLAND

Examinations in June at Baltimore. Address Christopher L. Ginn, D.O., secretary, Board of Osteopathic Examiners, 19 W. Mulberry St., Baltimore 1.

MASSACHUSETTS

Examinations July 8. Address Robert C. Cochrane, M.D., secretary, Board of Registration in Medicine, Room 37, State House, Boston 33.

MICHIGAN

Basic science examinations in May at Detroit and Ann Arbor. Address Mrs. Anne Baker, secretary, Board of Examiners in the Basic Sciences, 116 Mason Bldg., Lansing.

MINNESOTA

Basic science examinations June 3 at University of Minnesota, Minneapolis. Address Raymond N. Bieter, M.D., secretary, Board of Examiners in the Basic Sciences, 105 Millard Hall, University of Minnesota, Minneapolis 14.

MISSISSIPPI

Examinations June 23-24 at Robert E. Lee Hotel, Jackson. Applications must be filed by June 13. Address R. N. Whitfield, M.D., assistant secretary, State Board of Health, Old Capitol, Jackson.

NEBRASKA

Basic science examinations May 6-7. Address Mr. Husted K. Watson, Director, Bureau of Examining Boards, Department of Health, State Capitol Bldg., Lincoln 9.

NEVADA

Professional examinations in July. Address Walter J. Walker, secretary, Board of Osteopathic Examiners, 345 Cheney St., Reno.

Basic science examinations July 8. Address Donald G. Cooney, Ph.D., secretary, Board of Examiners in the Basic Sciences, Box 9005, University Station, Reno.

NEW JERSEY

Examinations on June 17. Address Patrick H. Corrigan, M.D., acting secretary,

Board of Medical Examiners, 28 W. State St., Trenton 8.

NEW MEXICO

Basic science examinations April 20. Address Mrs. Marguerite Cantrell, secretary, Board of Examiners in the Basic Sciences, P.O. Box 1522, Santa Fe.

NEW YORK

Examinations June 24-27 at Albany, Buffalo, Rochester, Syracuse, and New York City. Applications must be filed by May 26. Address John W. Paige, M.D., Chief, Bureau of Professional Licensing Services, 23 S. Pearl St., Albany.

NORTH CAROLINA

Examinations July 4-6 at Raleigh. Address F. R. Heine, D.O., secretary, Board of Osteopathic Examination and Registration, 108 Kensington Rd., Greensboro.

NORTH DAKOTA

Examinations July 12 at Minot. Applications must be filed by June 15. Address John O. Thoreson, D.O., Board of Osteopathic Examiners, New Provident Life Bldg., Bismarck.

OHIO

Examinations June 19-21 at Columbus. Applications must be filed by June 5. Address H. M. Platter, M.D., secretary, State Medical Board, 21 W. Broad St., Columbus 15.

OKLAHOMA

Fred H. Erhardt, Oklahoma City, has been reappointed to the Board of Osteopathy.

OREGON

Examinations in July at Portland. Address Mr. Homer I. Bobbitt, executive secretary, Board of Medical Examiners, 609 Failing Bldg., Portland.

PENNSYLVANIA

Leopold Salkind, Philadelphia, has been appointed to the Board of Osteopathic Examiners.

RHODE ISLAND

Professional examinations July 3-4 at Providence. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 366 State Office Bldg., Providence.

Basic science examinations in May at the State Office, Providence. Applications must be filed 21 days prior to examinations. Address Mr. Casey.

SOUTH CAROLINA

Examinations June 17 at Columbia. Address Ernest A. Johnson, D.O., secretary, Board of Osteopathic Examiners, Box 525, Summerville.

SOUTH DAKOTA

Professional examinations July 15-16. Address Mr. John C. Foster, executive secretary, Board of Medical and Osteopathic Examiners, Room 300, First National Bank Bldg., Sioux Falls.

Basic science examinations June 6-7 at Medicine and Science Building, University of South Dakota, Vermillion. Applications must be filed by May 23. Address Gregg M. Evans, Ph.D., secretary, Basic Science Board, 310 E. 15th St., Yankton.

TENNESSEE

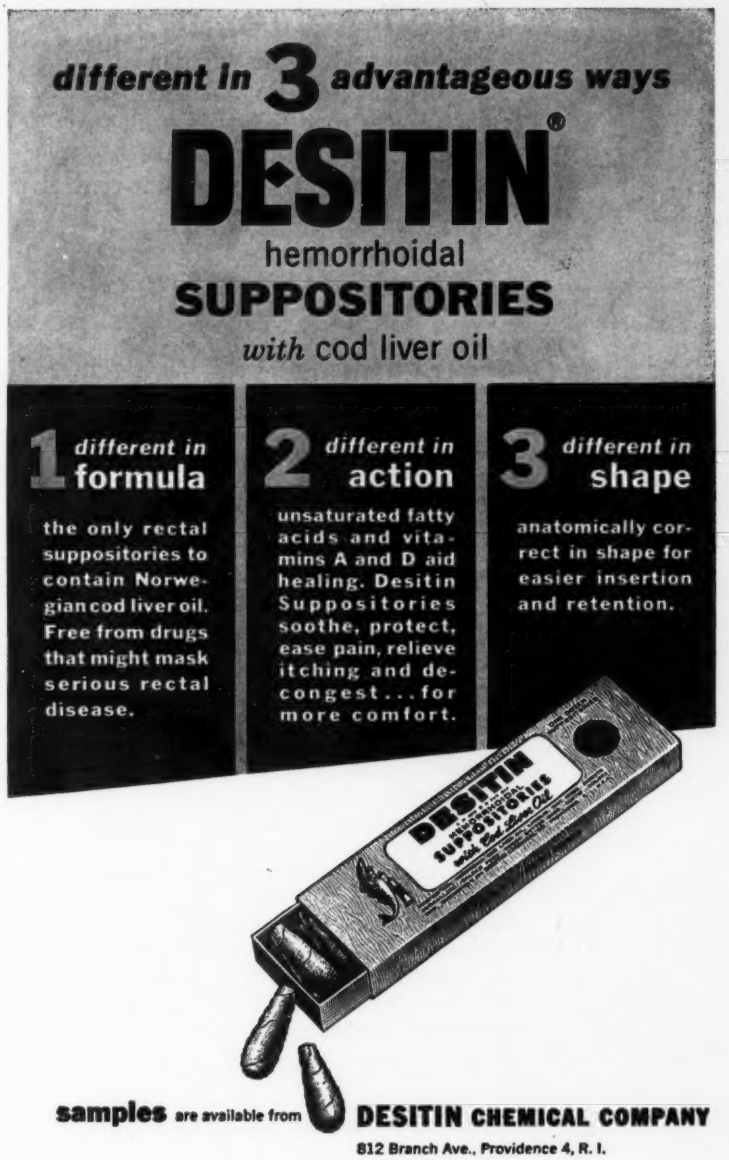
Paul Grayson Smith, D.O., Pikeville, has been reappointed to the Board of Examination and Registration.

Basic science examinations given every 3 months. Address O. W. Hyman, M.D., secretary, Board of Basic Science Examiners, 874 Union Ave., Memphis 3.

TEXAS

R. H. Peterson, D.O., Wichita Falls, has been elected vice president of the Board of Medical Examiners. G. G. Porter, D.O., Lubbock, was appointed to the Board.

Professional examinations June 23-25 at the Texas Hotel, Fort Worth. Applications must be filed 10 days prior to examinations. Applications for licenses by reciprocity must be filed 30 days prior. Address M. H. Crabb, M.D., secretary, Board of Medical Examiners, 1714 Medi-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the only rectal suppositories to contain Norwegian cod liver oil. Free from drugs that might mask serious rectal disease.
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"Functional vomiting
should be carefully distinguished from organic vomiting. Grave consequences may follow if evidences of organic derangement . . . are masked by treatment designed to control vomiting alone."[1]

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EMETROL will not suppress symptoms arising from organic etiology. It controls vomiting of functional origin quickly.

Dosage: Adults, 1 or 2 tablespoonfuls; infants and children, 1 or 2 teaspoonfuls, as often as every 15 minutes. Always administer *undiluted,* and forbid oral fluids for at least 15 minutes after each dose. Even if first dose is not retained, continue administration. If vomiting is not controlled within one or two hours, look for organic etiology. For individual dosage regimens in various indications, please send for literature.

1. Bradley, J. E.: Mod. Med. 20:71, No. 20, 1952.

Kinney KINNEY & COMPANY, INC. Columbus, Indiana

cal Arts Bldg., Fort Worth 2.

Basic science examinations April 18-19 at Austin, Galveston, and Houston. Address Mrs. Betty Ratcliff, chief clerk, Board of Examiners in the Basic Sciences, 303 E. Seventh St., Austin.

VERMONT

Examinations July 23-24 at Montpelier. Applications must be filed by July 10. Address Charles D. Beale, D.O., secretary, Board of Osteopathic Examination and Registration, Mead Bldg., Rutland.

WASHINGTON

Professional examinations in July. Address Mr. Edward C. Dohm, secretary, Professional Division, Department of Licenses, Olympia.

Basic science examinations in July. Address Mr. Dohm.

WISCONSIN

Professional examinations July 8-9 at Milwaukee. Address Thomas W. Tormer, Jr., M.D., secretary, Board of Medical Examiners, State Office Bldg., 1 W. Wilson St., Madison.

Basic science examinations June 7 at Marquette University School of Medicine auditorium, Milwaukee. Applications must be filed by May 29. Address Mr. W. H. Barber, secretary, Board of Examiners in the Basic Sciences, Ripon College, Ripon.

WYOMING

Examinations June 2 at Cheyennne. Address Franklin D. Yoder, M.D., secretary, Board of Medical Examiners, State Office Bldg., Cheyenne.

Reregistration of osteopathic licenses

May 1—Iowa, $1. Address Mr. Herman W. Walter, assistant secretary, Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines 9.

May 1—Washington, $2. Address Mr. Edward C. Dohm, secretary, Professional Division, Department of Licenses, Olympia.

During June—Hawaii, $5 residents, $2 for nonresidents. Address Frank O. Gladding, D.O., secretary, Board of Osteopathic Examiners, 504 Kauikeolani Bldg., Honolulu 13.

Before June 30—Delaware, $20. Address Joseph S. McDaniel, M.D., secretary, Board of Medical Examiners, 229 S. State St., Dover.

June 30—Virginia, $1. Address K. D. Graves, M.D., secretary. Board of Medical Examiners, 631 First St., S. W., Roanoke.

On or before July 1—New Mexico, $5. Address H. E. Donovan, D.O., secretary, Board of Osteopathic Examination and Registration, Route 2, Box 530, Scottsdale, Ariz.

July 1—Idaho, $10. Address Margaret Gilbert, Director, Bureau of Occupational Licenses, Room 354, State House, Boise.

July 1—Kansas, $10. Address Francis J. Nash, M.D., secretary, Board of Healing Arts, New Brotherhood Bldg., Kansas City.

July 1—Michigan, $5. Address P. Ralph Morehouse, D.O., assistant secretary, Board of Osteopathic Registration and Examination, 214 S. Superior St., Albion.

July 1—North Dakota, $3. Address John O. Thoreson, D.O., secretary, Board of Osteopathic Examiners, New Provident Bldg., Bismarck.

July 1—Oklahoma, $2. Address G. R. Thomas, D.O., secretary, Board of Osteopathy, 2923 N. Walker, Oklahoma City 3.

July 1—West Virginia, $2. Address Donald C. Newell, D.O., secretary, Board of Osteopathy, 137½ Main St., Oak Hill.

July 1, with 60 days following—Indiana, $5 residents, $10 nonresidents. Address, Miss Ruth V. Kirk, executive secretary, Board of Medical Registration and Examination, 538 Knights of Pythias Bldg., Indianapolis 4.

Examination by National Board

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary or the dean of the college, and the completed application blank, together with a passport photograph and check for the parts to be taken must be in the secretary's office by the November 1 or April 1 preceding the examination.

Examinations in Part I consist of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; and bacteriology, including parasitology and immunology.

Part II consists of examinations in surgery, including applied anatomy, surgical pathology, and surgical specialties; neurology and psychiatry; public health, including hygiene, medical jurisprudence; osteopathic principles, therapeutics, including pharmacology and materia medica.

Part III is an oral and practical examination given under the supervision of a chief examiner who is a member of the Board and by a panel of associate examiners. Subjects covered in Part III are: anatomy; physiology; pathology; osteopathic principles; therapeutics, and pharmacology; surgery, ophthalmology and otorhinolaryngology; obstetrics and gynecology; physical and clinical diagnosis; public health and communicable diseases.

These are oral examinations which the candidate may take after having satisfactorily completed the first 6 months of a 1 year internship in a hospital approved by the American Osteopathic Association for intern training. Part III is given annually at the Philadelphia, Kirksville, and Los Angeles colleges.

Eligibility requirements are as follows: Part I, satisfactory completion of the first 2 years in an approved school of osteopathy; Part II, satisfactory completion of Part I and of the first two quarters or trimesters of the senior year in an approved osteopathic college; Part III, satisfactory completion of Part II and at least 6 months of a 1-year internship approved by the American Osteopathic Association. The internship requirement does not apply to candidates who took Part I prior to July, 1950.

Applications must be filed with the secretary of the Board not less than 30 days prior to the examination dates. Address Paul van B. Allen, D.O., secretary, 1512 N. Delaware Street, Indianapolis 2.

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Milo of Crotona. Legendary figure in Greek Mythology. Succesful at ox lifting, he tried to split a tree with his fingers — was trapped — and eaten by a lion!

Products—like men—must be carefully developed to attain true professional stature. Rigid and sustained adherence to these timeless truths are among the vital but unlabeled ingredients in every fine Dartell formulation. Unlabeled ingredients which, again, enable us to introduce a *revolutionary new* product—the *emphatically new—boldly different* Instant DARTRIN Liquid with the WONDER amino acid—LYSINE. It is the *broadest spectrum, most inclusive* multi-vitamin "liquid-added" concentrate *ever* available—*anywhere.*

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Specialty board examinations

ANESTHESIOLOGY

Examinations October 25-26 at Boston. Applications must be filed before the April 1 prior to the examination date. Address Mrs. Esther Martin, corresponding secretary, American Osteopathic Board of Anesthesiology, P.O. Box 474, Coral Gables 34, Fla.

DERMATOLOGY

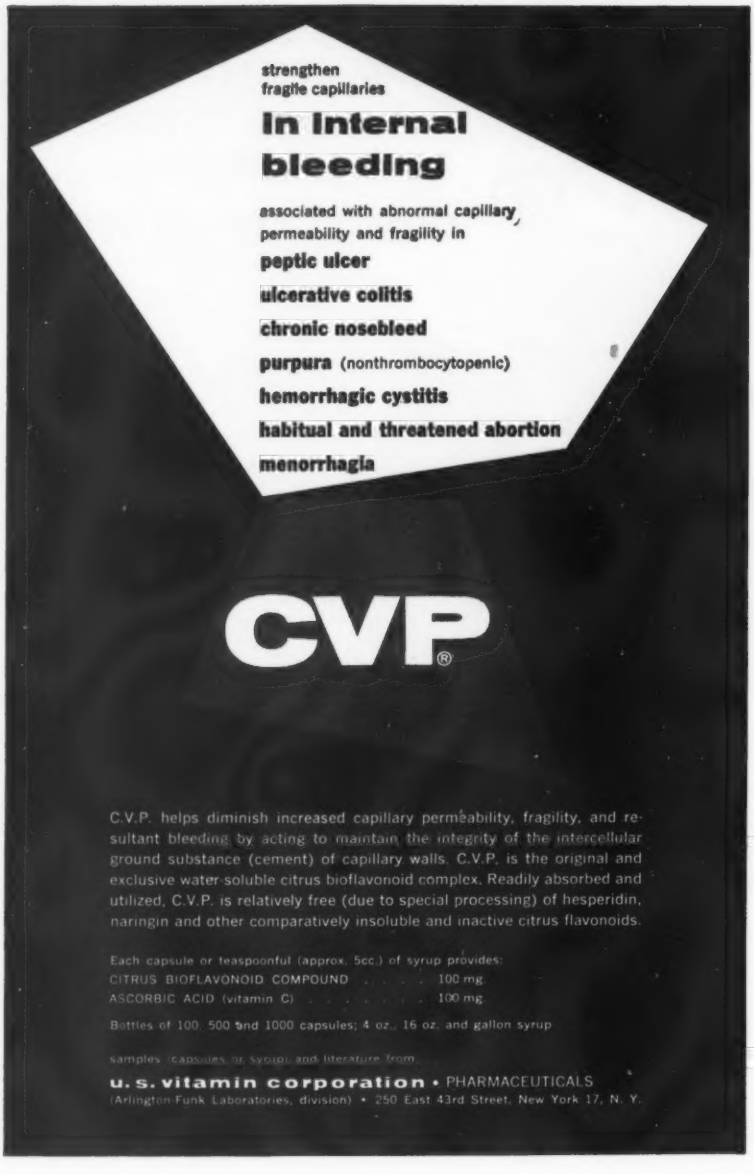
Examinations in July at Washington, D.C. Applications must be filed before the April 1 prior to the examination date. Address Donald L. Gardner, D.O., secretary, American Osteopathic Board of Dermatology, 649 S. Olive St., Los Angeles 14, Calif.

NEUROLOGY AND PSYCHIATRY

Clinical examinations April 12-13, oral tests December 13-14. Applications must be filed before the April 1 prior to the examination date. Address Floyd E. Dunn, D.O., secretary, American Osteopathic Board of Neurology and Psychiatry, Osteopathic Hospital of Kansas City, 926 E. 11th St., Kansas City 6, Mo.

OBSTETRICS AND GYNECOLOGY

Examinations February, 1959, at Detroit. Applications must be filed before the April 1 prior to the examination date.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OPHTHALMOLOGY AND OTORHINOLARYNGOLOGY

Examinations September 27-28 at Philadelphia. Applications must be filed before the April 1 prior to the examination date. Address Clifford C. Foster, executive secretary, American Osteopathic Board of Ophthalmology and Otorhinolaryngology, Detroit Gladys Clinical Bldg., 1388 Gladys Ave., Lakewood 7, Ohio.

PATHOLOGY

Examinations July 11 at Philadelphia. Applications must be filed before the April 1 prior to the examination date. Address O. Edwin Owen, D.O., secretary, American Osteopathic Board of Pathology, Hospital of the Philadelphia College of Osteopathy, 48th and Spruce Sts., Philadelphia 39.

PEDIATRICS

Clinical examinations July 8 at Philadelphia, oral and written tests July 9-10 at Washington, D.C. Applications must be filed before the April 1 prior to the examination date. Address Betsy B. MacCracken, D.O., assistant secretary, American Osteopathic Board of Pediatrics, 6007 Melrose Ave., Hollywood 38, Calif.

PHYSICAL MEDICINE AND REHABILITATION

Examinations July 12-13 at Washington, D.C. Applications must be filed before the April 1 prior to the examination date. Address Robert C. Ruenitz, D.O., secretary, American Osteopathic Board of Physical Medicine and Rehabilitation, 3122 W. Vernon Ave., Los Angeles 8.

PROCTOLOGY

Examinations July 12 at Washington, D.C. Applications must be filed before the April 1 prior to the examination date. Address Carlton M. Noll, D.O., secretary, American Osteopathic Board of Proctology, Box 47, Evergreen, Colo.

RADIOLOGY

Examinations October 24-25 at Boston. Applications must be filed before the April 1 prior to the examination date. Address D. W. Hendrickson, D.O., secretary, American Osteopathic Board of Radiology, 3429 E. Douglas Ave., Wichita 8, Kans.

SURGERY

Examinations October 25-26 at Boston. Applications for examination in specialty fields of surgery, gynecological surgery, neurosurgery, orthopedic surgery, peripheral vascular surgery, must be filed prior to April 1. Address Mrs. E. F. Martin, corresponding secretary, American Osteopathic Board of Surgery, P.O. Box 474, Coral Gables, Fla.

Influenza

History, epidemiology, and speculation*

Richard E. Shope, M.D.†

We are faced at the moment with the most publicized influenza epidemic of all time, and there is great diversity of opinion concerning its eventual course and outcome. Some, who believe that the present outbreak is no different from those that have appeared periodically since the 1918-20 pandemic, contend that it will come and go without any serious effects and that the public is being unduly alarmed. Others feel that the present outbreak bears some of the earmarks of the epidemic illness that occurred in the spring preceding the great influenza

*This R. E. Dyer lecture was reprinted from *Public Health Reports*, February 1958.

†Dr. Shope is professor and member of the Rockefeller Institute for Medical Research, New York City. With a special interest in pathology, he has made important contributions through his investigations of such subjects as swine influenza, epidemiology of virus diseases, and intermediate host systems in infectious diseases. The latest among his many honors is a 1957 Albert Lasker award, conferred on him for outstanding achievement in research on infectious diseases. Currently, Dr. Shope is also director of the Armed Forces Commission on Epidemiological Survey.

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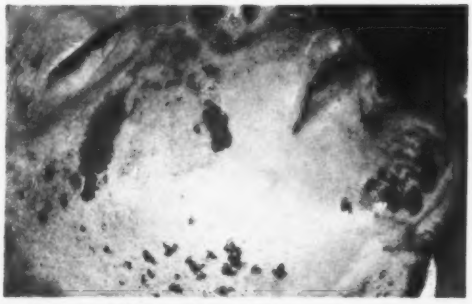

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1. *Dripps, R.D.: Hazards of the Immediate Postoperative Period, J.A.M.A. 7:795 (Oct. 19, 1957) [This reference reviews postoperative hazards, and does not refer to Adrenosem Salicylate]*
2. *Ersner, M.S., and Lerner, S.S.: M. Clin. North America 40:1749 (Nov., 1956)*
3. *Peele, J.C.: Further Observations on the Use of Adrenosem Salicylate in the Control of Hemorrhage from the Nose and Throat, N. Carolina M.J. 17:98 (March, 1956)*
4. *Brown, W.S.: The Use of Adrenosem Salicylate to Control Postoperative Bleeding in Plastic Surgery: Dermabrasion, Northwest Medicine. In Press.*
5. *Wilkins, B.D.: Gastrointestinal Bleeding as Seen by the Proctologist, J.A.M.A. 163:1214 (April 6, 1957)*
6. *Orzac, E.: Medical Care of the Child Patient Before and After Adenoidectomy and Tonsillectomy, N.Y. State J. Med. 55:886 (Mar., 1956)*
7. *N.N.R., 1957, p. 265*

pandemic of the autumn of 1918 and that, as such, may constitute but the first wave of a more serious type of influenza to follow. Those who consider that this speculation may have some probability believe that the time has arrived when we must attempt to determine whether our knowledge of influenza is advanced enough to permit a serious attempt at combating it or whether we are still in a phase where all we can do is conduct further studies of pandemic influenza. The latter group are of the opinion that an intensive program of widespread immunization with a vaccine containing the new influenza virus strain should be instituted with all possible promptness.

The current epidemic of Asian influenza apparently started late in February of 1957 in Kweichow Province in southwest China. It spread to Yunnan Province in early March and was fairly well distributed through China by the end of that month. It spread to various parts of the Orient during the following 3 months and reached the United States about the middle of May.

In this country, the disease spread slowly, involving initially military establishments that had received personnel returning from the Orient. It appeared in various groups of civilians that congregated from different parts of the United States during the summer, most notably in summer camps and in a summer church conference at Grinnell, Iowa. Ill individuals returning from these meetings set up foci of infection in their home communities, and by late July and early August the disease was widely seeded throughout the United States. During the early part of the outbreak, Asian influenza showed little tendency to spread except on very close contact and tended to remain sporadic. With the beginning of autumn, the disease diffused more widely and rapidly than it had at first.[1]

The symptoms shown by individuals ill with influenza, consisting of fever, depression, anorexia, and variable respiratory signs, have been relatively mild and have lasted for 2 to 5 days. There have been to date relatively few deaths attributable to Asian influenza.

Asian influenza has as its primary etiological agent a type A influenza virus which appears, on serologic grounds, to be antigenically quite different from type A influenza viruses that have prevailed in previous outbreaks, swine, A, and A'.[2] It would appear from this that the world is being exposed to a virus with which it has had little or no previous experience and that, theoretically at least, we should be ripe for an extensive outbreak with the new agent.

The marked antigenic shift in the Asian virus, the deficiency of antibody against it in humans, and its relatively rapid spread and high attack rates in the Far East are features of the new virus that alarm many people. In addition, a number of the deaths that have occurred in our country have been in young adults, the age group that was hardest hit during the devastating 1918-20 outbreak. The suggestion from all this is that the current influenza virus has epidemiological and pathogenic potentials that must be taken seriously.

To lay groundwork for speculation about the possible course and outcome of the present outbreak of so-called Asian, or Far East, influenza, I should like to review briefly a little of what is known of past influenza pandemics. No one knows when pandemic influenza first appeared, although Hirsch[3] dates its initial recognition to the year 1173. Since then it has recurred at irregular intervals under various names: febris catarrhalis epidemica, tussis epidemica, and finally influenza. The most recent pandemic, that of 1918, was by far the most deadly ever experienced. During the 4 autumn months that it prevailed, it caused some 21 million deaths throughout the world. Nearly half a million of these occurred in the United States. Thus almost three times as many people died of pandemic influenza as lost their lives during the 4 years of World War I, which ended just as the 1918 pandemic was passing its peak.

I have selected three outbreaks of pandemic influenza to discuss, for comparative purposes, and to use historically in connection with my consideration of the present influenza outbreak. I have chosen one from olden days, before the speed of modern travel entered to confuse the epidemiological picture (1789), one from the beginning of the bacteriological era (1889), and one modern one (1918).

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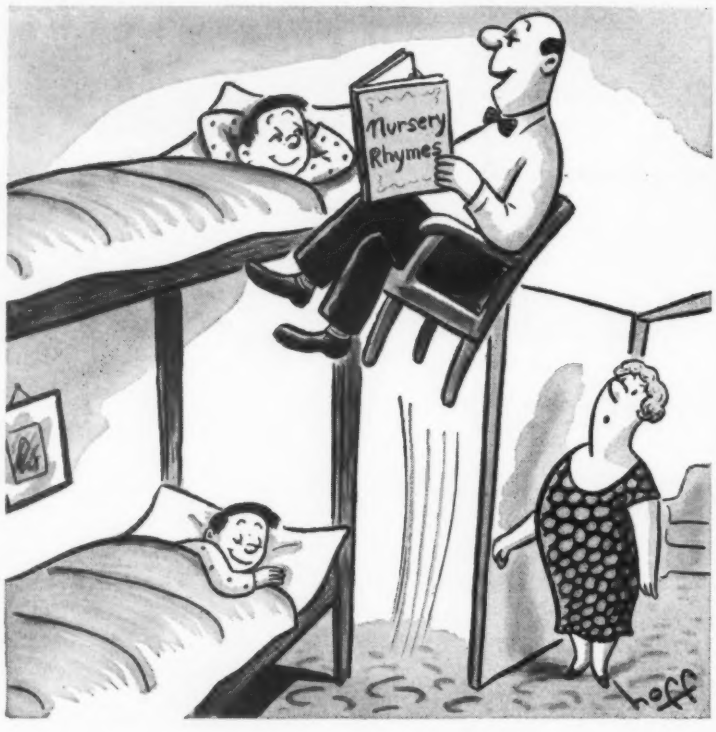

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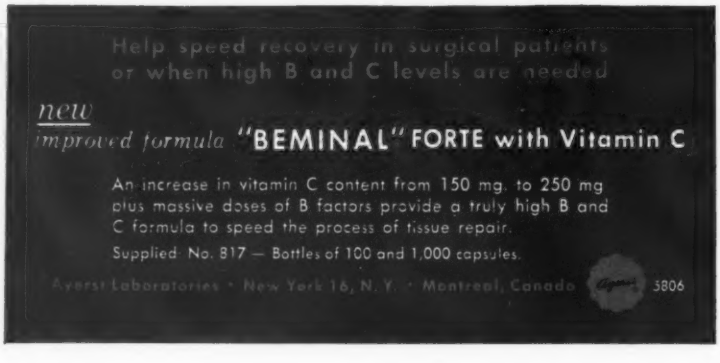
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PANDEMIC OF 1789

The 1789 outbreak of influenza as it occurred in the United States was well described by Robert Johnson in his inaugural dissertation for the degree of doctor of medicine at the University of Pennsylvania in 1793. To orient you as to the time of this influenza outbreak, it came in the year that Washington was inaugurated President, that the first Congress met in New York, and that the French Revolution began. The first steamboat did not cross the Atlantic until 1819, and the first steam train did not run until 1830. Air travel, of course, was not even dreamed of. This outbreak occurred before modern means of rapid travel were available and when a man could go no faster than his horse could gallop. Despite this, according to Johnson, the influenza of 1789 spread like wildfire. It had the usual earmarks of later pandemics, being characterized by a prostrating illness of sudden onset and a febrile course of 4 to 5 days. Recovery was followed by several weeks of persistent coughing and prolonged debility in some instances. The attack rate was high, and the disease affected mainly persons in middle life.

The mortality rate was low, according to Johnson, and most patients recovered unless injudiciously treated. The suggestion was apparent in Johnson's paper that the treatment might frequently be more hazardous to life than the disease itself.

Now Johnson, in his definition of influenza, characterized it, among other things, as "a disease capable of being propagated by contagion." In spite of this conception, he could not completely rationalize the speed of its dissemination on the basis of transmission by contagion alone and visualized the importance of a "vicious quality of the air."

Johnson supported his contention about the spread of influenza by citing examples from the pandemic of 1782, in which he felt transmission by contact did not play the essential role. He stated, "Influenza appeared at London between the 12th and 18th, at Oxford in the third week, and at Edinburgh on the 20th day of May." He doubted that the disease could have been transferred to these three cities in such rapid succession "by things imbued with the contagion or by persons labouring under the complaint."

Later in his thesis he wrote, "On the 2d day of May 1782, the late Admiral Kempenfelt sailed from Spithead with a squadron under his command, of which the Goliath was one, whose crew was attacked with the influenza, on the 29th of that month: the rest were affected at different times: and so many of the men were rendered incapable of duty by this prevailing sickness, that the whole squadron was obliged to return into port about the second week in June, not having had communication with any shore, and having cruised solely between Brest and the Lizard."

Still another example was cited as follows, "About the 6th of May [in the same year 1782], Lord Howe sailed for the Dutch coast, with a large fleet under his command: all were in perfect health: towards the end of May the disorder first appeared in the Rippon, and in 2 days after in the Princess Amelia. Other ships of the same fleet were affected with it at different periods: Some indeed not until their return to Portsmouth about the second week in June. This fleet also had no communication with the shore until their return to the Downs, on their way back to Portsmouth, towards the 3d or 4th of June."

Johnson rationalized his views concerning the multiplicity of foci of origin of influenza during a pandemic by contending, "The morbific matter exciting the disease must have originated at some time and somewhere: and a cause like to that which gave rise to it in any one country, at any one point of time, might produce it in another country at the same time, under similar circumstances."

He continues, "I do not assert, nor do I wish to be understood to mean, that the influenza is not at all contagious: on the contrary, I am possessed of facts which prove in the most incontestable manner, that it may be, and often is, propagated from one person to another by means of contagion. But I mean, and the arguments which I have adduced, I trust, will warrant the conclusion, that the disease often does arise from some vicious quality of the air, or exhalation in it, as well as from a matter arising from the body of a man labouring under disease."

It is apparent that Johnson had certain difficulties in understanding and explaining the rapidity of spread of influenza. However, he did not have to make his views take into account the knowledge

that influenza is an infectious disease with a specific microbial cause, but instead could implicate various meteorologic abnormalities to explain incongruities that were beyond his comprehension.

I have gone into some detail in outlining opinions and observations concerning a pre-modern pandemic of influenza because I wanted to point out that influenza spread with unbelievable rapidity even before we had fast transportation to blame for its rapid and widespread diffusion and that, in the absence of such explanations to account for its dissemination, others, plausible at the time, were resorted to.

PANDEMIC OF 1889-90

The first pandemic of influenza in the bacteriological era was that of 1889-90. Finkler[4] has written, ". . . this influenza epidemic broke forth from the East, and overwhelmed the world in a pandemic such as had never before been seen. The high flood of the pandemic flowed over the whole globe in the space of a few months." It started supposedly in Bukhara in Turkestan in the month of May, though influenza was also prevalent in Greenland and in Hudson Bay territory at about the same time. Influenza did not become widespread in 1889 until October, when it prevailed over most of Siberia and European Russia. There it was supposedly first confused with dengue and later referred to as Siberian fever. By November it was prevalent over most of the rest of Europe, and in December was widespread in England and America. In the United States, the disease raged for about 2 months before subsiding, and there were periodic recrudescences during the next 4 years.[4,5]

There seems to be general agreement that this pandemic had most of the characteristics of the greater one in 1918 except for its lower fatality. W. T. Vaughn,[6] who studied the 1918 pandemic and thoroughly reviewed the literature dealing with that of 1889, wrote in his monograph on influenza, "The longer one studies the observations made in 1889-93, the more firmly convinced one becomes that the recent pandemic (1918) was identical with the former in practically all of its manifestations."

The main finding of value from the studies of the influenza pandemic of 1889-90 was the discovery by Pfeiffer of the so-called influenza bacillus.[7] Pfeiffer believed that this organism was the cause of influenza because, according to him, it was present in all cases and not present in normal individuals unless they had recently recovered from influenza. Furthermore, it was associated with the lesions of the disease. Pfeiffer's views were widely accepted, and it is safe to say that the majority of medical people at the time believed that he had discovered the cause of influenza.

The 1889 pandemic may turn out to be of especial interest in connection with the current outbreak of influenza. Studies of the antibody content for the Far East strain of influenza virus in serum samples from persons of various ages have resulted in some very unusual and interesting findings: it has been noted that only samples from individuals 70 to 90 years old contain antibodies for this new virus.[8,9] This finding may date the time of last occurrence of a virus of the serologic type of the present Asian strains, and the age distribution comes suggestively close to placing the time in the neighborhood of the 1889 pandemic. Thus there seems to be a possibility that we are at the moment experiencing a revisitation of the 1889 pandemic strain of influenza. This is, of course, speculative.

PANDEMIC OF 1918

During the spring of 1918 an influenza-like disease became prevalent in various parts of the world. This spring outbreak has been generally accepted as the first wave of the great 1918 pandemic. It is believed by epidemiologists to have been the immediate forerunner of the severe autumn outbreak which swept through the entire world with such deadly effect.[6]

The first wave in 1918 received especial prominence in Spain, where it was said to have been sudden in its appearance and brief in its course, and to have subsided without leaving a trace. During April an illness similar to the Spanish epidemic occurred in American, British, and French troops in France, as well as in the civilian population. In England the

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* Jackson, A. S.: Journal-Lancet 76:45 (Feb.) 1956.

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first wave appeared in June and was composed for the most part in mild cases.[10] It affected simultaneously a large percentage of the population and showed a preference for individuals between 15 and 35 years of age. An influenza epidemic occurred also in Japan and China in the spring of 1918.[11] It was mild and was variously called "3-day fever" or "wrestler's fever," in addition to influenza. The spring wave of influenza was not highly diffusible; it reached only limited regions of Africa, largely missed South America, and affected Canada only slightly.

It is evident from accounts of the first wave that it was almost everywhere very mild so that although the morbidity was often high, sometimes amounting to 50 percent or more of the invaded population, the case fatality was exceedingly low.[10] In many localities the general mortality rates were scarcely affected. In most countries the total number of persons contracting influenza seems to have been considerably smaller in the first wave than in the second.

The second wave, which proved to be extremely lethal, struck simultaneously in many parts of the world. It is generally stated to have appeared in Europe during the last week in August. In the United States it appeared first in Boston, supposedly from cases occurring on the receiving ship at Commonwealth Pier, during the last week of August also. During the next week it broke out among troops at Camp Devens in Massachusetts and sailors at the Great Lakes Naval Training Station in Illinois. Between the first and middle of September, hundreds of new foci appeared in various army camps, naval stations, and civilian communities. By the first week in October the pandemic was full blown throughout the entire world with the exception of a few islands and Australia. The height of the pandemic so far as this country is concerned was the fortnight between October 12 and 26.[6,10]

In the second wave, although there were many cases of the same mild type as in the first, perhaps as many as 80 percent of all attacks, a different manifestation of disease became prominent. This took two forms: (*a*) cases which started immediately with an acute pulmonary inflammation resulting in lung edema, violet cyanosis, and death within a few days, and (*b*) cases which developed on the fourth or fifth day of an ordinary influenza a definite bronchopneumonia which ran the usual course of primary bronchopneumonia of prepandemic times and was followed, accordingly, either by death or by a long convalescence.[12]

Despite the fact that there was some divergency of opinion and considerable confusion concerning the epidemiological data, most epidemiologists believed that the 1918 autumn pandemic arose at 1 or 2 sites and from these spread throughout the world in a little over a month's time. It was commonly accepted, and there was evidence to support the opinion, that the pandemic in this country started in or near Boston.[6,10] The cases responsible for the infection in Boston supposedly came from Europe, where the pandemic got under way very little, if any, earlier than it did in the Boston area. The infection was said to have been spread to other parts of the United States by the movement of patients among the civilian population or by the transfer of infected military personnel from one camp to another. The speed of spread was accounted for on the basis of the speed of available transportation. Certainly in a large number of instances, cited in the literature of the times, the onset of the disease in a community or a military establishment coincided very closely with the arrival of infected individuals.

However, certain discrepancies enter to spoil the perfection of the case-to-case transfer explanation for the spread of influenza during the second wave of the 1918 pandemic. These have to do with certain flukes in distribution, certain skips of large bodies of population. For example, Boston and Bombay had their epidemic peaks in the same week, while New York, only a few hours by train from Boston, did not have its peak until 3 weeks later.[10] In like manner, Seattle, Los Angeles, and San Francisco had their epidemic peaks some 2 weeks earlier than Pittsburgh, which is just an overnight run from the infected eastern seaboard cities. In some respects, the epidemiologist had an easier time getting the pandemic disease transferred over long distances than

in taking it to communities nearby. Thus, though it got to Chicago, presumably from Boston, fairly early and affected that city in September, it did not reach Joliet, just 38 miles away, until October. Similarly, it took 3 weeks to cross the little State of Connecticut from New London County to Fairfield County.[15]

In the light of these various epidemiological ambiguities one cannot help wondering whether perhaps more than one mechanism of dissemination may have been operating during the 1918 pandemic to account, on the one hand, for the lightning-like spread of disease over large distances and, on the other hand, for its slower diffusion over relatively small distances. The suggestion is apparent that extensive and widespread preseeding of virus in a masked or occult form, with its almost simultaneous provocation to infectivity by a stress common to wide geographic areas, might better account for the appearance of extremely rapid dissemination over great distances than does the view that case-to-case transfer was the responsible mechanism.

In swine influenza, a disease that I shall discuss a little later, the causative virus is preseeded in a masked, noninfective form by means of an intermediate host, the swine lungworm.[13] Swine preseeded in this manner with occult virus remain normal to all outward appearances. However, all that is required to bring them down with influenza is the application of some stress of itself relatively innocuous. The stress, operative in nature for swine influenza, is meteorologic in character and is associated with the onset of cold, wet, inclement weather in the autumn.[14] Swine that have been preseeded with masked influenza virus come down almost simultaneously in geographically widely separated areas when subjected to the same meteorologic stress, and the resultant widespread outbreak of influenza creates the illusion of being a disease that has diffused over an extensive area with unbelievable rapidity.[13] Secondary cases of swine influenza follow at a more leisurely pace as a result of case-to-case contact with the primary, provoked infections.

I do not mean to imply, of course, that during the 1918 pandemic, the swine lungworm preseeded influenza virus in the human population. What I should like to suggest, though, is that influenza virus may be capable of existing in a masked form, similar to that found in the swine lungworm, in the human respiratory tract and that in such form it may be widely preseeded throughout a human population. It seems possible even that such preseeding may have been one of the functions of the milder, more slowly diffusing first wave of the 1918 influenza pandemic.

To return to further consideration of the 1918 pandemic, it may be said that, despite the apparent epidemiological discrepancies to which I have called attention, the opinion that direct and indirect transmission from man to man could account for the observed epidemiological picture of pandemic influenza was generally accepted. Whatever the correct explanation may be for the wide dissemination of the 1918 autumn pandemic, there is no doubt that the disease became very extensively distributed in short order. This second wave differed from the first in that it was more severe, more widespread, of greater dispersive power, and in some places at least, of a different age incidence.

The mortality rates recorded during the second wave varied widely among different groups and communities. The case fatality rate ranged from 3.1 percent in New London, Conn., to 0.8 percent in San Antonio, Tex.[16] Military personnel were especially hard hit, and Vaughn and Palmer[17] have stated that during the 4 autumn months of 1918, 1 of every 4 soldiers in the United States had influenza, 1 of every 24 developed pneumonia, and 1 of every 67 died.

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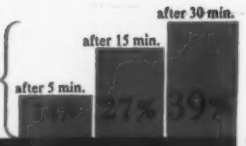
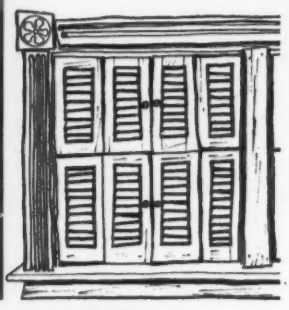


Average vital capacity of 20 patients in acute asthmatic attack was 2088 cc. before treatment.*

*Spielman, D.: Ann. Allergy 15:270, 1957.

AIR HUNGER in ASTHMA



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– Schluger, J., et al.: Am. J. M. Sci. 234:28, 1957.

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ducted experiments were those carried out by the Navy and the Public Health Service. In the series of experiments conducted in Boston during November and December 1918, 62 volunteers between 15 and 34 years of age were used.[18] Thirty-nine of these had no history of having had influenza at any time, although apparently some degree of exposure had occurred. Filtered and unfiltered secretions from the upper respiratory tracts of patients with typical influenza were sprayed into the nose and throat and instilled into the eyes of some of the volunteers; direct swabbing from nasopharynx to nasopharynx was the method of exposure for others; and in one experiment freshly drawn citrated blood was injected subcutaneously. The results were summarized as follows: "In only one instance was any reaction observed in which a diagnosis of influenza could not be excluded, and here a mildly inflamed throat seemed the more probable cause of the fever and other symptoms. Nothing like influenza developed in the other volunteers."

In an attempt to imitate nature more closely, 10 volunteers were exposed to patients with acute influenza in hospital wards. Each volunteer was placed very near the patient, shook hands with him, chatted with him for 5 minutes, and then received the patient's breath full in his face five times while he inhaled. Finally the patient coughed five times directly in the subject's face. Each volunteer did this with each of 10 different patients, all of them acutely ill for not more than 3 days. All patients used had typical acute cases selected from a distinct focus or outbreak of disease. None of the volunteers developed the disease.

A second series of similar experiments was carried out in San Francisco during the same period also with completely negative results.[19]

These two groups of experiments were considered to show that the requirements for the transmission of influenza from man to man, such as apparently exist commonly under natural conditions, are not readily imitated experimentally. Actually they constituted probably a very good demonstration of how solid an immunity was conferred by even a subclinical bout with the etiological agent of the 1918 influenza.

Much work was expended during the 1918 pandemic in an effort to determine the causative agent of the outbreak. Prior to the 1918 studies, *Hemophilus influenzae* had been generally regarded as the agent responsible for influenza. It seems quite natural, therefore, that much of the 1918 investigative work should have been concerned with a further study of the relationship of this bacterium to the disease. The results obtained were frequently confusing and contradictory, which is not surprising in view of the fastidious character of the organism and the technical difficulties associated with its isolation from the respiratory tract. It is difficult to give an accurate appraisal of the significance of the large amount of work done during the 1918 pandemic in trying to prove or disprove the etiological relationship of the Pfeiffer bacillus to influenza. About all that can be said is that the role of the organism was more controversial after the smoke of the 1918 pandemic studies had cleared than it had been before.

With the failure to gain clear-cut evidence that *H. influenzae* was the cause of the 1918 pandemic, the view was rather widely held and was frequently expressed that a virus was probably the etiological basis for the disease. This actually constituted no more than an ungrounded opinion, for consideration of the data on the subject published from 1918 investigations reveals that no one adduced good evidence to incriminate a virus as the causative agent. The upshot of a terrific amount of effort during the 1918 influenza pandemic to learn the cause of the disease was to weaken the view that Pfeiffer's bacillus was the etiological agent and to substitute no other in its place.

I have just indicated that no one succeeded in determining the causative agent responsible for the 1918 pandemic influenza. This is not strictly true and what I should have said is that no investigator working in a laboratory did it. Actually Mother Nature stepped in and took care of the situation for us, as I shall now point out.

SWINE INFLUENZA

At the height of the second wave of the 1918 pandemic, a new disease appeared among swine in the Middle West.

This new disease was not a sporadic and localized outbreak; actually millions of swine became ill and thousands died during the first few months of its occurrence. The epizootic persisted in various localities until January 1919 and reappeared in the autumn and winter of that year as extensive and severe as in 1918. It has recurred each year since then, but it varies annually in its severity and extent.

Dr. J. S. Koen, an inspector in the Division of Hog Cholera Control of the U. S. Bureau of Animal Industry, was the first to recognize that the disease was different from any previously encountered.[20] He was so much impressed by the coincidental prevalence of human influenza and by the resemblance of the signs and symptoms seen in man to those occurring in hogs that he became convinced that the two were actually the same. He therefore gave the name of "flu" to this new disease of hogs. The opinion of Koen that "flu" represented an entirely new swine epizootic disease and that swine might have been infected in the first instance from man was shared by some veterinarians and many farmers in the Middle West.[21]

Everything was not rosy, however, with Koen's contention that a direct causal relationship might exist between the swine and the human diseases. The basis for the objections was largely economic since it was feared that, if it became widely known that swine could acquire human influenza, the pork-consuming public might become alarmed and the pork market would be adversely affected. Koen, however, was a fiery little man and, though frequently forced to defend his convictions verbally, stuck to them steadfastly. A year after his choice of what seemed a most unpopular name and diagnosis, he defended himself as follows:[22]

"I have no apologies to offer for my diagnosis of 'flu.' Last fall and winter we were confronted with a new condition, if not a new disease. I believe I have as much to support this diagnosis in pigs as the physicians have to support a similar diagnosis in man. The similarity of the epidemic among people and the epizootic among pigs was so close, the reports so frequent, that an outbreak in the family would be followed immediately by an outbreak among the hogs, and vice versa, as to present a most striking coincidence, if not suggesting a close relation between the two conditions. It looked like 'flu,' it presented the identical symptoms of 'flu,' and until proved it was not 'flu' I shall stand by that diagnosis."

The late Dr. Paul A. Lewis and I began our studies of swine influenza during the autumn of 1928, and we were elated and pleased when we isolated from our very first cases of the disease an organism that was, so far as we could tell, like the non-indol-producing strains of Pfeiffer's bacillus.[23] We named this organism *Hemophilus influenzae suis*. We isolated the same organism from field outbreaks of swine influenza again in 1929 and in 1930. It was the only organism we found with any regularity, and sometimes it was the only one present in the respiratory tracts of sick swine. Unfortunately, so far as assigning it etiological importance was concerned, *H. influenzae suis* administered in pure culture to susceptible swine produced no illness. We were thus faced with the dilemma of having found an organism that seemed always to be present in cases of the disease, that was demonstrable at the sites of the influenza lesions in the respiratory tract, but that failed to induce disease when administered to normal swine.

It was subsequently found that a filtrable virus, differing from any hitherto known, was important in the causation of swine influenza.[24] This virus, however, was not the sole cause of swine influenza: when the virus was administered alone to susceptible swine it produced a disease that was clinically much milder than the true swine influenza as seen under natural conditions.

It was finally determined that swine influenza was a disease of complex etiology and that both the bacterium *H. influenzae suis* and the new filtrable virus were etiologically essential.[24] We thus had in swine influenza a disease caused by the concerted activity of two agents, one of which, the bacterium, was strikingly like Pfeiffer's bacillus, long suspected by many of playing a causative role in human influenza. The other agent etiologically essential was completely new and did not, so far as anyone knew at the time of its discovery, have a counterpart in human disease. As it later developed, however, when Smith, Andrewes, and Laidlaw[25] demonstrated a virus as the cause of an influenza outbreak in 1933 and when this new virus was compared with the one

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Source—Barrow, D. W.: The Clinical Management of Varicose Veins, ed. 2, New York, Paul B. Hoeber, Inc., 1957, p. 79.

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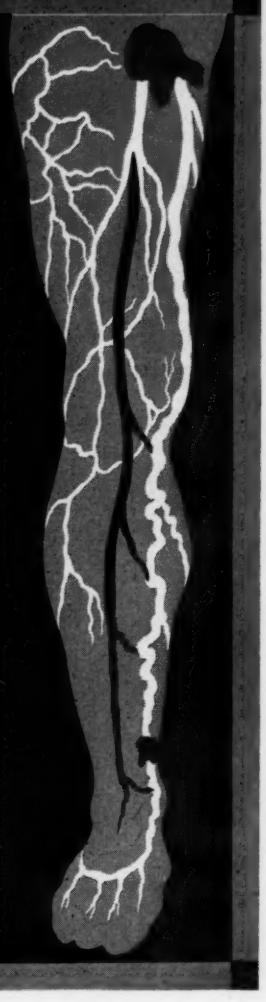

from swine influenza, the two were found to be strikingly alike. They affected the same species of animals; they gave a high degree of cross protection against each other; and they could only certainly be differentiated from one another on the basis of certain serologic tests.[25-29]

Thus in 1933 we had for consideration the intriguing situation of an animal disease of complex etiology, resembling influenza, in which one of the essential agents resembled the bacterium found extensively present in the second wave of the 1918 influenza pandemic and in which the other essential agent resembled the virus responsible for the then current interpandemic influenza. It seemed that, despite the failure of human investigators of the 1918 influenza pandemic to discover the cause of the outbreak, Mother Nature, using swine as her experimental animals, had done so. Furthermore, she had apparently segregated not one human agent but two from the disease of the severe second wave.

The late Sir Patrick Laidlaw[19] and I[21] summarized the indirect historical and experimental evidence bearing on the relationship of swine influenza to pandemic human influenza and pointed out that it strongly indicated the likelihood that swine had indeed acquired their infection naturally from man in 1918 and that the swine influenza virus was, therefore, the surviving prototype of the 1918 pandemic virus. Two further bits of experimental evidence have subsequently been developed in support of the hypothesis. In serologic tests conducted against swine influenza virus with serum samples from humans of various ages in 1935 and 1936, the results were such as to indicate strongly that an agent of the swine influenza virus type had been widely prevalent in man in the period from 1918 to 1920 and had not been present since then.[22,23] In like manner, serologic tests conducted in 1952[24] with swine influenza virus and the serums of humans of various ages again pinpointed the time of prevalence of an agent of the swine influenza virus type to the 1918-20 period. These two sets of studies, one carried out 17 years and the other 34 years after the 1918 pandemic, both orienting the time of prevalence of a virus of the swine influenza type to the period 1918-20, would seem rather effectively to support the view that swine influenza represents the surviving prototype of the agent that prevailed in man during the second wave of the 1918 influenza pandemic.

In brief, it seems to me that, from the swine influenza findings, one is warranted in speculating that the second wave of the 1918 influenza pandemic had as one of its etiological components a virus that was serologically closely related or identical to the swine influenza virus. It was, therefore, a type A virus not too much unlike the type A viruses with which we have had experience in the influenza outbreaks since 1933.

I am further going to assume for speculative purposes that the etiology of swine influenza as we know it today represents accurately the etiology of the second wave of the 1918 pandemic and that back in the autumn of 1918, when swine acquired their disease from man, the pigs effectively segregated the important etiological components of the human disease, namely, Pfeiffer's *H. influenzae* and a type A influenza virus. I hope that you will not consider this last assumption too illogical because to me it appears completely reasonable that, if an experimental host can select the etiologically essential virus, it might equally well be expected to select, from the mixture of micro-organisms that prevailed during the second wave of the 1918 outbreak, the etiologically important bacterium.

EVIDENCE OF IMMUNITY

A question of very great interest to us right now, when we are in the midst of an outbreak of mild influenza which may turn out to be the first wave of a more severe outbreak, is what constituted the difference between the mild first wave and the severe second wave of the 1918 pandemic. I have speculated, on the basis of the swine influenza work just discussed, that the second wave of the 1918 pandemic was caused by a type A influenza virus, of which the swine influenza virus is the surviving prototype, acting in concert with *H. influenzae*. What then caused the first wave, and why was the first wave so much milder than the second one? Are there any data from the investigative work conducted during the 1918 outbreak that might shed light on the relationship of the one wave to the

other? I believe that there are and that they concern the question of immunity conferred by an attack of influenza during the first wave against infection during the second.

Because this question of the presence or absence of an immunological relationship between the first and second waves of the 1918 influenza has an important bearing on my speculations, I should like to cite several examples dealing with this point.

The Annual Report of the Surgeon General of the Navy for the year 1919 says in part, " . . . many men of the Navy who had influenza in the spring or summer of 1918, while in European waters, escaped during the later epidemics (winter 1918-19) both in Europe and the United States. The British Grand Fleet experienced the same thing: with few exceptions those men who contracted influenza in May and June were not attacked during the more fatal epidemics in October, November, and December. The conclusion is that mild attacks earlier in the year, as a rule, conferred immunity against the more fatal type of the disease which prevailed subsequently." With regard to the experience in the British Navy, Dudley[26] has pointed out that the crews of only certain ships were affected by the first wave, the crews of others escaping the infection. During the second wave the attack rate on the ships that had had the earlier infection was about 25 percent, while on those ships that escaped the first wave the attack rate was about 50 percent.

In most Army groups the outfits were moved about too much and transferred too frequently to furnish reliable records as to an immunological relationship between the two influenza waves in 1918. There are, however, large numbers of isolated records involving relatively small numbers of individuals. For instance, Gibbon[30] writes that of 400 patients with influenza hospitalized from among the 2,000 troops under his care, none admitted in June, July, or August was readmitted in October, November, or December, and none admitted in either of those periods was readmitted in February 1919. Dopter[27] reports recurrent epidemics in a French Army division of which he was surgeon in 1918. During the spring wave, toward the end of April, only the infantry regiment of the division was attacked, the artillery regiment escaping infection. In the fall a group of heavy artillery was attached to the division, bringing influenza with it. The disease spread, but only those not ill during the first wave were very seriously ill in the second.

V. C. Vaughn[28] cites the experiences of the 2d Infantry Regiment which underwent influenza in June of 1918 in Hawaii before being transferred to Camp Dodge about August 1. When the severe second wave hit Camp Dodge in September and October, the 2d Regiment was only slightly affected, although the attack rate for the camp as a whole was about 33 percent and the case fatality 6.8 percent.

Probably the most impressive example of immunity among troops is that related by V. C. Vaughn[28] for a division stationed at Camp Shelby. The division, numbering about 26,000, underwent a mild influenza epidemic of about 2,000 cases in April 1918. Vaughn comments as follows on the subsequent history of the division: "This was the only division that remained in this country without change of station from April until the fall of 1918. During the summer this camp received 20,000 recruits. In October 1918 the virulent form of influenza struck this camp. It confined itself almost exclusively to the recruits of the summer and scarcely touched the men who had lived through the epidemic of April. Not only the 2,000 who had had the disease in April, but the 24,000 who apparently were not affected escaped the fall epidemic. It appears from this that the mild influenza of April gave a marked degree of immunity against the virulent form in October."

Certain information about the civilian population also indicated an immunological relationship between the first and second waves of influenza. Malone and McKendrick[29] observed in Calcutta that three institutional populations who experienced infection during the July wave passed through two later waves, in December 1918 and February 1919, without contracting the disease a second time. They believed that their evidence indicated an immunity lasting for at least 9 months. The Inspector General of Health in Spain (cited by W. T. Vaughn, ref-

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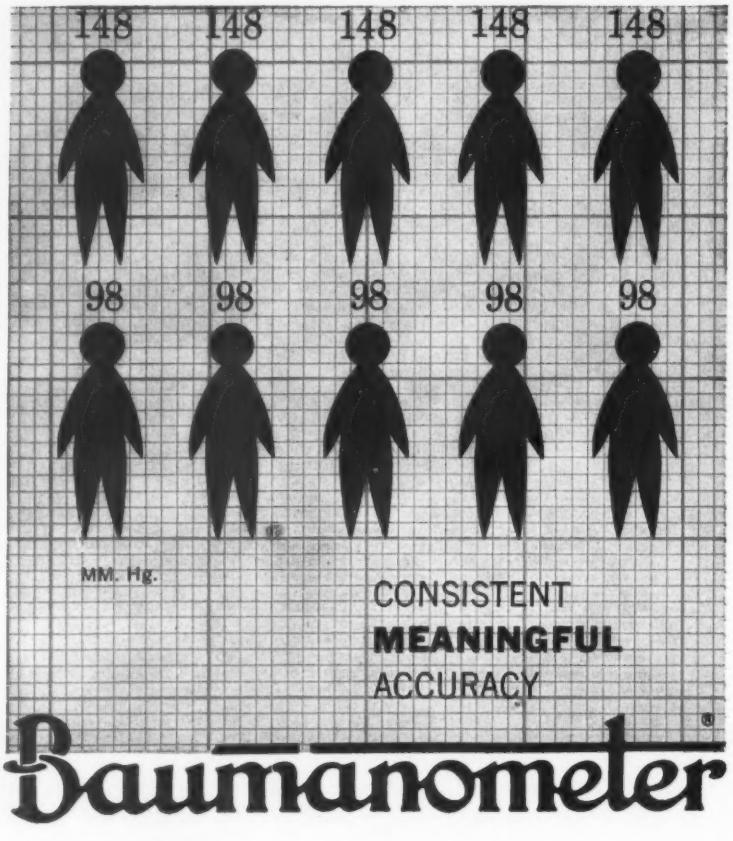

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erence 6) reported that those cities that had the disease in May 1918 suffered lightly in the autumn, while cities that had been spared in the first invasion suffered most in the second. V. C. Vaughn[39] has pointed out that among the large cities in the United States having a low death rate during the autumn wave of influenza were a number that had reported an unusually high incidence of influenza and penumonia in the spring. Jordan[38] has called attention to the fact that the attack rates in English towns during the autumn wave were only about half those prevailing in towns in the United States and comments on the temptation to account for the differences on the basis of the more sharply defined and extensive first wave which prevailed in England having conferred a more extensive immunity. W. T. Vaughn[6] in studies deriving from his house-to-house canvasses in Boston found only four instances of more than one attack of influenza among 1,971 casses occurring in his series between March 1918 and August 1919.

There are, of course, some examples in the literature which fail to show a clear-cut immunological relationship between the two waves. My reason for calling detailed attention to the examples indicating a relationship and neglecting those that do not is this: When one is seeking to show a positive relationship between two conditions of unknown etiology, a positive correlation is, because of diagnostic uncertainties, of much more value in indicating the true relationship than is a negative one.

It is apparent, I believe, from the examples I have just cited that, by and large, an attack of influenza during the mild first wave protected an individual against infection during the more severe second wave. Such a relationship strongly suggests that the etiological agents responsible for the two waves were either identical or so closely related immunologically as to cross-protect one against the other. Since what presumptive evidence we have indicates that a type A influenza virus of the swine influenza prototype was involved in the second wave during 1918, the assumption seems warranted from this immunological data that the same or a very closely related type A virus was also involved in the first wave. Why then, since similar influenza viruses were apparently of etiological importance in each of the waves, were the two waves clinically so different?

ROLE OF H. INFLUENZAE

A possible answer to this question, I believe, is supplied by the bacteriological studies of those investigators who sought to find the Pfeiffer bacillus during both waves of the 1918 pandemic. As I have pointed out, from the time of Pfeiffer's announcement of its discovery in 1892 until 1918, *H. influenzae* was generally regarded as the agent responsible for epidemic influenza. Because of this belief, much of the work done during the 1918 pandemic was concerned with a further study of the relationship of this bacterium to the disease.

In the light of this large effort to find *H. influenzae*, the marked difference encountered in the incidence in which it was demonstrated during the first and second waves by individual investigators who studied both waves was striking and suggestive. The findings of almost all were in agreement that the Pfeiffer bacillus was either absent or of low incidence in cases of the first wave and abundantly present during the second wave. Sobernheim and Novakovic,[41] for instance, found Pfeiffer's bacillus to be practically absent from the early cases, whereas in the second wave they found it in pure culture in a large majority of the cases investigated (18 out of 23). Fildes, Baker, and Thompson[42] failed to find influenza bacilli in cases during July and August but found them during the autumn wave in the sputum of 12 of 15 uncomplicated cases and in practically all their postmortem material. Similarly, McIntosh[43] failed in the summer but found Pfeiffer's bacillus in the autumn in 8 of 12 examinations of the nasopharynx in uncomplicated cases, and in the sputum of 21 of 25 cases with bronchopneumonia. The experience of others both in Europe and in the United States was similar.[44-47]

In this country, for example, Opie, Blake, Small and Rivers[47] found that the incidence of Pfeiffer's bacillus in normal individuals from isolated communities, or

in groups free from respiratory disease prior to the occurrence of the 1918 autumn epidemic, was relatively low (10 to 20 percent), but that before the fall epidemic, in groups in which bronchitis and pneumonia were fairly prevalent, the incidence was higher (25 to 50 percent). During the epidemic the incidence rose to 95 percent.

I believe it can be safely said that, so far as the bacteriology of the first wave of the 1918 influenza epidemic can be used as a criterion, Pfeiffer's bacillus was not demonstrated with enough frequency to support its claim as a causative agent. Its presence probably about coincided with its distribution in healthy persons at the time that the first wave appeared. During the second wave, however, the organism appears to have been found with great regularity.

In summary then, it appears that the Pfeiffer bacillus was absent or of low incidence in cases of the first wave and was almost uniformly present in cases of the second wave. How then could these differences in the bacterial flora during the two waves have influenced the severity of a disease caused by a type A influenza virus? Here I must again revert to consideration of swine influenza for a possible answer to this question.

As I have indicated earlier, infection of swine with the swine influenza virus alone results in an extremely mild respiratory disease of 2 or 3 days' duration from which the animals uniformly recover. However, swine infected with the swine influenza virus in combination with *H. influenzae suis* undergo a severe prostrating, febrile illness of 4 or 5 days' duration, frequently accompanied by pneumonia, from which death results in about 3 percent of all cases. In swine, then, the disease caused by the swine influenza virus alone resembles, in its mildness and other clinical characteristics, that seen in man during the first wave of the 1918 influenza, while the disease caused by a concomitant infection with the virus and *H. influenzae suis* resembles that seen during the second wave of the 1918 influenza. Furthermore, swine recovered from the mild ailment caused by infection with the virus alone are solidly immune to the more serious disease caused by infection with the virus plus *H. influenzae suis.*[48]

It seems apparent, if the analogy between swine influenza and the 1918 influenza pandemic is an acceptable one, that the mild first wave of the 1918 pandemic can then be interpreted as one in which only a type A virus of the swine influenza prototype was involved. The second wave, on the other hand, was one in which the infection was a complex one, involving the same or an immunologically closely related type A virus and *H. influenzae.*

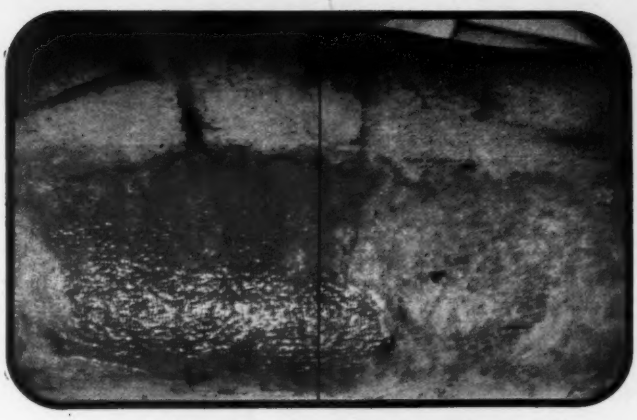
APPLICATIONS TO PRESENT OUTBREAK

Let us now return to the current Asian influenza outbreak. If this outbreak is eventually to reach serious proportions, we appear at the moment to be in what in 1918 was the first wave. The cases ordinarily are not severe, and the mortality rate is relatively low. So far as I am aware, the Pfeiffer bacillus is not being isolated with any regularity from cases, and certainly it has not been reported to have been present in cases that have come to autopsy.

The current influenza may be considered on clinical grounds to be similar to a number of the outbreaks of interpandemic influenza that we have experienced since 1932 or to the first wave of the 1918 pandemic. We have no way of knowing at the moment whether it will be followed by a second wave of greater pathogenicity, as was the first wave in 1918. The fact that the human population is, in this outbreak, experiencing infection with a virus with which it has had no previous experience, to judge from the absence of specific antibodies, suggests that we may be ripe for a continuation of the present epidemic into a severe and killing second wave, but I do not think that anyone is, at the moment, in a position to predict accurately on this point.

Now, in the light of the speculations in which I have indulged, I should like to outline briefly my views as to how the present outbreak should be handled from a practical standpoint.

I believe it would be very foolish not to take full advantage of what means we



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have to protect ourselves. By this I mean that vaccination against the current epidemic strain seems to me to be strongly indicated. I think it is especially urgent that those who have apparently missed clinical infection during the early part of the present outbreak be immunized, since they may be the very ones in whom occult virus has been preseeded. We have waited a long time to learn whether, when the next pandemic came along, we would be in a position to combat it, or only in a position to study pandemic influenza further. If we do not vaccinate widely and effectively and a second wave of severe influenza should appear, then undoubtedly we shall have copious opportunity again to study pandemic influenza. If we do vaccinate now, the most valuable information that can be derived will be whether or not we have finally gotten ourselves into a situation where we know that we can protect against outbreaks of pandemic influenza.

One frequently hears the view expressed that if another pandemic of severe and killing influenza occurs, the antibiotics can handle the situation satisfactorily by taking care of the lethal secondary bacterial invaders. Now this may be quite true for most of the commonly thought of complicating organisms. However, if *H. influenzae* should happen to be of importance, I doubt that we as yet have sufficient experience in treating infections of this organism in adults to be certain on this point. Although chloramphenicol, streptomycin, and the tetracyclene antibiotics have been effective in *H. influenzae* infections in children, it seems to me that we are at the moment too deficient in accurate information to predict just how effective these antibiotics would be in treating adults, especially in the event that the hemophilus was acting concomitantly with influenza virus. In the light of such possible therapeutic uncertainties, I feel that primary reliance for protection against pandemic influenza should be placed on preventive rather than therapeutic procedures.

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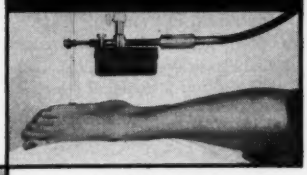

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Influenza: recent and long-term trends*

Asian influenza first appeared in the Far East during the spring of 1957 and spread to many other areas of the world, reaching the United States in August. The disease began to attain epidemic proportions here in late summer and recorded its maximum incidence in mid-autumn. Data collected by the Public Health Service indicate that the peak was reached in the week ending November 2d, when 1,250,000 new cases are estimated to have occurred. The outbreak then subsided rapidly, new cases of the disease continuing to decrease in number to the end of the year. The Public Health Service estimates that approximately 20 million cases of Asian influenza occurred in the United States from September through December. It is difficult to ascertain with any certainty the incidence of the disease on a national basis because influenza is not reportable in large areas of the country, and an accurate diagnosis is established in relatively few cases.

The course of the epidemic through the Northern Hemisphere is reflected in the morbidity statistics of our Army. First to be struck were our troops in the Far East. In June, American Army per-

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*Morrison, L. F.: Arch. Otolaryng. 59:48-53 (Jan.) 1954.

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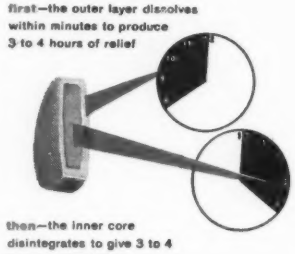
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sonnel in Japan experienced a sharp rise in the frequency of common respiratory diseases, including influenza. Among our soldiers stationed in Korea, the high point came in July and exceeded that recorded in Japan the month before. Our Army units in Europe began to feel the impact of the outbreak in August, but the frequency of cases continued to rise until October, paralleling the experience of troops in continental United States.

Toward the end of October another outbreak of influenza struck our forces in the Far East, as it did the general population in that area; like the first, it has not been virulent. By early November the case rate among our troops there was actually higher than the peak recorded during the first wave. This recurrence, coupled with the fact that the highest incidence of the disease in our country usually occurs during February and March, indicates the possibility of a recurrent wave here early in 1958.

Although the outbreak this year has affected large areas and huge numbers of people throughout the world, it differs radically from the pandemic of 1918. In the present epidemic, fatalities have been largely concentrated among older people and, to a lesser extent, among the very young, whereas in the 1918 pandemic the greatest mortality occurred in early adult life. Another significant point of difference is that the case fatality rate in the present outbreak is low. At the height of the 1918 pandemic, more than 50 percent of all deaths in the country's large cities were ascribed to pneumonia and influenza; in sharp contrast, the corresponding proportion was only about 7 percent in early November of 1957. Similarly, the impact of the epidemic on the total death rate has been much less this year than it was in 1918. The mortality from all causes combined in 1957 is expected to be only about 2 percent higher than that in 1956—reflecting largely the increased mortality from the cardiovascular diseases occasioned by the influenza outbreak—whereas the total death rate in 1918 was 29 percent in excess of that in 1917.

Although there is the possibility that a second wave of influenza may sweep the country, the prospects of keeping it in check are good. Barring unforeseen changes in the type of virus involved, the incidence of the disease may be reduced by wider use of the vaccine which has been developed. Furthermore, the dangerous respiratory complications that account for a large proportion of the deaths among influenza victims can be combated in a large proportion of cases by antibiotics and chemotherapy, even though no specific treatment is available for influenza itself.

Influenza vaccine*

Joseph E. Smadel, M.D.†

Another significant episode in the mass immunization of a large civilian population occurred during the Asian influenza epidemic. The acceptance of the current influenza vaccine program by laymen, physicians, and public health officials undoubtedly was favorably influenced by the highly successful campaigns for immunization against poliomyelitis. On the other hand, the development of Asian influenza vaccine and the production of almost 50 million ml. of this vaccine during the 7 months after the newly isolated viral agent was first brought to this country represent a remarkable feat which could have been accomplished only because of the enormous experience gained through the extensive study of influenza during the past two decades.

Dr. Thomas Francis and his associates of the Commission on Influenza of the Armed Forces Epidemiological Board have been outstanding leaders in the extended studies of influenza and in the development and demonstration of the effi-

*Reprinted from *Public Health Reports*, February 1958.

†Dr. Smadel is an associate director, National Institutes of Health, Bethesda, Md. This paper is based on comments at a symposium on Asian influenza held by the American College of Preventive Medicine and the health officers' section at the 1957 meeting of the American Public Health Association in Cleveland, Ohio.

cacy of influenza vaccines.[1] Following the pattern developed by the commission, the Army Medical Department and the Public Health Service created a series of influenza watch laboratories to assist in providing prompt and accurate information on the occurrence and spread of influenza. These watch laboratories have since been integrated with the World Health Organization's system which now encircles the globe.[2]

A little-known experiment undertaken by American influenza investigators and the vaccine producers several years ago provided additional background for the work in 1957 with Asian influenza vaccine. In 1951 England experienced a moderately severe outbreak of influenza, which was considered a possible hazard to the United States. It was decided to determine how quickly the British virus could be imported and analyzed for antigenic composition, and incorporated into a vaccine, if it were found to be different from the earlier strains of influenza virus. Accordingly, at the height of the epidemic in Liverpool, British colleagues supplied a strain which was flown to the United States and promptly distributed to the laboratories at Walter Reed Army Institute of Research and the National Institute of Allergy and Infectious Diseases, Public Health Service. The institute, in turn, sent samples to the influenza vaccine manufacturers. The self-imposed problem of the various laboratories was to produce 1 liter of vaccine of acceptable potency, sterility, and safety in the shortest possible time. The two Government laboratories accomplished their task before the end of 3 weeks and the biologic houses shortly thereafter. The various workers recognized the portent of their achievement but realized that many factors had been in their favor and that similar success might not be regularly attained.

DEVELOPMENT OF ASIAN INFLUENZA VACCINE

The present influenza vaccine program must make obeisance to each of the earlier developments described above. Using the watch laboratory organization, the Army Medical Department isolated the Asian influenza virus from patients in the Far East in late April. By mid-May the Department recognized that the virus was antigenically dissimilar from other influenza A viruses and that the American population was virtually without protective antibodies against the new strain.[3] Simultaneously, investigators in other countries made comparable observations. Numerous other investigators in university, governmental, and industrial laboratories in the United States began their studies on the Asian virus during the last week of May. In the meantime, WHO influenza detection centers throughout Asia, the Western Pacific, Australia, and the Middle East noted and reported the rapid spread of influenza from Hong Kong. It soon became apparent that the new virus was highly contagious, provoking large epidemics affecting up to 20 percent of the general population in one area after another, and in certain selected groups involving 60-70 percent of the population. Fortunately, the mortality remained low as the disease continued its sweep.[4]

As a result of intensive work in the commercial laboratories, the first experimental lots of Asian monovalent vaccine were available before mid-June and were promptly placed under assay in volunteers by personnel of the Commission on Influenza, the Army, and the Public Health Service. It is worth noting that the first cases of Asian influenza were diagnosed in the continental United States during the first week of June.[5a]

The military services, during the latter part of June, provided a most important stimulus to the commercial production of vaccine by inviting bids for 2,650,000 ml. of monovalent Asian vaccine. At about the same time, the Surgeon General of the Public Health Service informed the manufacturers that he anticipated the need for large amounts of influenza vaccine for use by the civilian population during the coming fall and winter. With these demonstrations of active interest in a vaccine prepared against the newly isolated Asian influenza virus, the manufacturers that had produced influenza vaccine in previous years offered to make a strenuous effort to meet the demands created by the anticipated epidemic. These manufacturers undertook this commitment, which involved considerable financial risk, without government subsidy.

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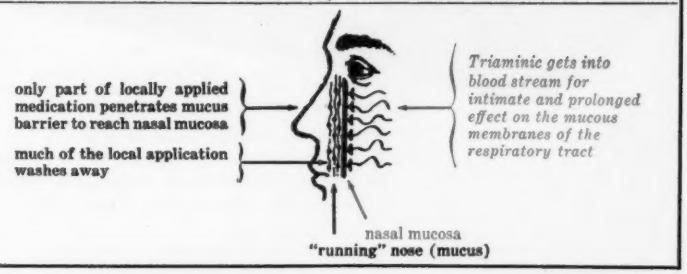
Duration of relief comparatively short	*Duration of relief long—may extend to 6-8 hours*
May cause local pathological changes in nasal mucosa	*No pathological changes in nasal mucosa*
Often followed by secondary or "rebound" congestion	*Secondary congestion seldom occurs*
Frequently leads to nose drop habituation	*Habituation phenomenon does not occur*
Administration often inconvenient and unpleasant; may be impossible in children	*Conveniently administered as tablet or syrup*
Much medication wasted, running down throat	*Complete dose swallowed without waste*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Vaccine Dosages

The Public Health Service recommends the following dosages of Asian influenza vaccine:

For those who have not been vaccinated, subcutaneous injection of 1.0 cc. of the 400 CCA unit strength Asian influenza vaccine currently being produced.

For those who have received 0.1 cc. intracutaneously or 1.0 cc. subcutaneously of the 200 CCA unit vaccine previously produced and for those individuals at special risk (pregnant women, older persons, and those with chronic respiratory or cardiac disease), a second 1.0 cc. subcutaneous injection of 200 CCA vaccine is recommended. Physicians may also wish to recommend a second injection for other patients. If the 400 CCA unit strength vaccine is available, 0.5 cc. should be given. The second dose should be received not less than 2 weeks after the first.

For children, the recommendation of the American Academy of Pediatrics is: For children under 5 years of age, 0.1 cc. intracutaneously or subcutaneously, repeated after 1 to 2 weeks; for children from 5 to 12 years of age, 0.5 cc. subcutaneously, repeated after an interval of 1 to 2 weeks; for children over age 13, the adult dosage.

The summer months were devoted to solving technical problems such as (*a*) increasing the yield of virus growing in embryonated eggs, (*b*) developing methods for assaying potency which would circumvent the time-consuming procedures previously employed, (*c*) determining the immunogenicity of the vaccine in man, (*d*) training new technical teams in the pharmaceutical houses and renovating old facilities or constructing new, and (*e*) arranging for unprecedented quantities of fertile hens' eggs.

By mid-August, two manufacturers had produced a total of 500,000 ml. of monovalent Asian vaccine and obtained its release by the Division of Biologics Standards of the Public Health Service. Progress thereafter was rapid. Before the end of the first week in September, each of the six companies manufacturing the vaccine had produced one or more lots meeting the requirements. Moreover, 4,600,000 ml. of vaccine (total bulk volume) was released by the Division of Biologics Standards by September 5. Production increased dramatically, and by the end of October 42,600,000 ml. bulk vaccine had passed the tests performed concurrently by the vaccine manufacturers and by the Division of Biologics Standards.

POTENCY AND EFFICACY OF VACCINE

Drawing on the fund of knowledge accumulated over the years from field trials by the Commission on Influenza, it was estimated in June that the effective dose of Asian strain vaccine would probably be not less than 200 chicken cell agglutination (CCA) units when administered subcutaneously to adult human beings. Because of the difficulties encountered during the early summer in obtaining high yields of Asian virus in embryonated eggs, it seemed unlikely that a vaccine containing more than 200 CCA units of Asian antigen could be produced. Hence, the potency of the new monovalent vaccine was set at 200 CCA units per milliliter.[6a]

A series of studies undertaken during the summer by members of the commission, the Army Medical Department, the Communicable Disease Center, and the National Institute of Allergy and Infectious Diseases was designed to determine the effective dose of Asian antigen. Only those experiments bearing on three specific points will be mentioned. One is concerned with the level of antibody which developed in patients convalescent from Asian influenza. Another deals with the amount of viral antigen required to elicit a similar level of antibody in a vaccinated person. A third point is concerned with the level of antibody found in volunteers who were resistant to experimental challenge with Asian virus.

If some license is permitted in interpreting data of others, it may be stated that levels of hemagglutination inhibition antibodies of the order of a titer of 1:32 actual dilution of serum (or 1:128 final dilution of serum) were present in con-

valescent serums.[3] Moreover, to induce a similar level in about 90 percent of persons inoculated with a single dose of vaccine given subcutaneously, 400-500 CCA units of antigen were required,[7] according to Keith E. Jensen of the Communicable Disease Center. Finally, appreciable resistance to challenge was displayed by those volunteers who had antibody levels of the order of 1:32. (In the tests of Bell and associates,[7] 78 percent of the placebo controls developed signs of illness following challenge; 60 percent of vaccinated persons who failed to acquire detectable antibodies became ill; 43 percent of those with titers of 1:10 to 1:20 developed influenza; while only 25 percent of those who had titers of 1:40 or greater became ill.)

Such information as this, coupled with knowledge of the improved yields of virus from infected eggs and the increased facilities of the manufacturers, led to a recommendation in October that the potency of monovalent Asian influenza vaccine "be increased from 200 CCA units to 400 CCA units per milliliter as soon as feasible and not later than December 1, 1957."[6]

October 1957 saw the shift to the production of 400 CCA unit vaccine. Indeed, by November 1, two manufacturers had submitted to the Division of Biologics Standards for concurrent testing 13 lots with the 400 CCA unitage. As of November 12, 2 million ml. of 400 unit vaccine had been released by the division; 13 million ml. was available by December 12.

For many years, the influenza vaccines used in civilian and military populations have been of the polyvalent type, containing several strains of influenza A virus and one or more strains of influenza B virus. The formula for a polyvalent material which is now being produced for use during the latter part of the winter is as follows: influenza A, Asian strain—200 CCA; influenza A′, PR 301 strain—100 CCA; influenza A, PR 8 strain—100 CCA; and influenza B, Great Lakes strain—100 CCA. The recommended basic course of immunization consists of 2 subcutaneous injections each of 1.0 ml., the second following the first by not less than 2 weeks.

FUTURE

While the record to date for developing and producing Asian vaccine has been truly amazing, it would be foolhardy to assume that it will be possible to do as well or better the next time the country is confronted with a severe epidemic caused by an unfamiliar strain of influenza virus. There was an interval of almost 6 months between the time the first strain of Asian virus reached a research laboratory in the United States and the time at which the weekly pneumonia and influenza deaths increased above the "epidemic threshold" in the 108 cities which are under surveillance by the Communicable Disease Center.[5b]

Suppose the next widespread occurrence of influenza begins in North America or arrives here promptly and reaches epidemic proportions within a month or so? The measures which were successful in this epidemic did not provide any useful quantity of vaccine during the first 2 months after the virus seed reached the manufacturers. I think it is obvious that the search must continue for means of rapidly increasing the resistance of populations to epidemic influenza.

Recognition of this fact was one of the reasons the Surgeon General of the Public Health Service, on the recommendation of the Association of State and Territorial Health Officers, established an Advisory Committee on Influenza Research. This committee was asked, among other things, to consider and advise the Surgeon General on what further research might be undertaken to strengthen influenza control in the future and to suggest where such research might most profitably be done.

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Fewer accidental deaths in 1957*

Accidents took an estimated total of about 94,000 lives in the United States during 1957, or somewhat fewer than in 1956. It was the first time in three years that the number of fatally injured showed a reduction. The total increased from 90,000 in 1954 to little short of 93,500 in 1955, and further to 95,000 the following year. Provisional figures indicate that the accident death rate in 1957 was 55 per 100,000 population, or about on the level with the all-time low recorded in 1954.

Motor vehicle accidents accounted for approximately 38,500 fatalities in 1957. Although this is about 1,000 below the toll in the preceding year, it is still one of the highest on record. Motor vehicles continue to be the leading cause of fatal injuries by a considerable margin, accounting for about two fifths of all accidental deaths. There is some encouragement, however, to be gained from the preliminary data available for 1957, which indicate that for the first time in three years the annual death rate per 100 million vehicle miles showed a decline.

Fatal injuries sustained in and about the home also showed a reduction of about 500 from the year before, the number killed in such accidents in 1957 totaling 27,000. On the other hand, fatalities in public accidents, other than those involving motor vehicles, increased to about 16,500, or about 500 more than in 1956. Accidents arising out of and in the course of employment were responsible for about 14,500 deaths in 1957, of which approximately 3,000 involved a motor vehicle.†

Catastrophes—accidents in which five or more persons are killed—accounted for nearly 1,700 deaths during 1957, about 400 more than in the year before. The increase reflects largely the unusually heavy loss of life caused by Audrey, the June hurricane which struck the coast of Louisiana and eastern Texas, and then veered northward. The storm left in its path approximately 350 known dead, most of them in the fishing village of Cameron, La. All five of the major catastrophes—those which caused at least 25 deaths—occurred in the first six months of the year. In addition to the hurricane, two other natural disasters were experienced. In late March a blizzard swept through the Great Plains States, taking 29 lives, and on May 20 a tornado struck the Kansas City area, killing 39 persons. The fire which destroyed a home for the aged at Warrenton, Mo., on February 17—the second largest disaster of the year—was responsible for 72 fatalities. A gas explosion in a coal mine near Bishop, Va., on February 4 caused 37 deaths. Thus, the five major catastrophes together accounted for more than 500 deaths. Although there were the same number of accidents involving at least 25 deaths in 1956, the toll was appreciably smaller—about 270 fatalities; in 1955 nine major accidents occurred, killing more than 600 persons.

Natural disasters in the year just ended were responsible for more than one third of all the lives lost in accidents in which five or more persons were killed. Motor vehicle accidents ranked second in this respect, accounting for more than one quarter of the fatalities. Fires and explosions caused one fifth of the total. Military aviation, civil aviation, and water transportation each contributed a much smaller proportion.

Because of the heavy toll in the June hurricane, the loss of life in natural disasters was the highest in nearly two decades. Catastrophes involving motor vehicle mishaps and fires and explosions also took higher death tolls this year than last. On the other hand, fatalities in civil and military aviation, and railroad transportation were materially lower in 1957 than in 1956. The loss of life in water transportation remained about the same.

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, December 1957.

†These 3,000 deaths are also included in the total figure for motor vehicle accidents.

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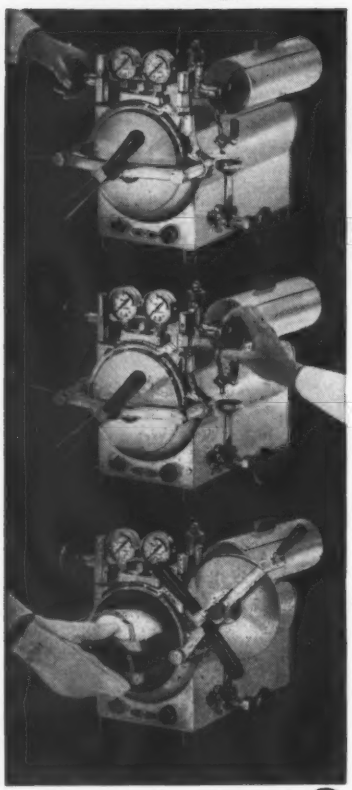

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Lessons in planning for epidemics*

Mack I. Shanholtz, M.D.†

Given forewarning of an epidemic of influenza, early planning is an obvious step. We have learned a great deal from the experience of planning for the present epidemic.

In working with the Asian influenza epidemic, we have learned some things that will be useful in planning for the total fight against influenza. In addition to what we know about the Asian influenza virus, the vaccine, and immunity through use of the vaccine, we have learned that cooperation between State and local health departments and State and local medical societies is necessary for the success of any program combating influenza.

I believe we have learned, too, what the health department's proper role is in such an activity. The health department acts as an information center, first of all, for the dissemination of educational material. It also acts as a central tabulation center on cases, distribution, and deaths. It helps in setting up priority systems for the vaccine as well as diagnostic facilities for the identification of the virus. And it helps organize community resources for stricken areas.

The experience gained from the present epidemic also suggests measures that should be undertaken—and others that should be avoided—in the event of another epidemic. Should that event come to pass, I should suggest the following:

Planning should be done by the two State groups most vitally interested and concerned in setting up a control program: the State health department and the State medical society. The first meeting for consideration of epidemic control should be limited to these two groups; larger groups of people, of whom some may not be too well informed, will serve only to waste time and create confusion. It is better that a small group devise the framework of a control program before calling in others to fill in the details. After the first meeting, however, allied medical groups, voluntary health agencies, and appropriate community groups should aid in preliminary planning.

In the event of another epidemic, State and local health departments and medical societies should present a united front to further a successful community control program. At the very outset, a State policy must be formulated covering all aspects of such a control program. Local groups can then plan programs for their respective communities within the framework of State policy. The State should also anticipate emergency needs and locate special resources.

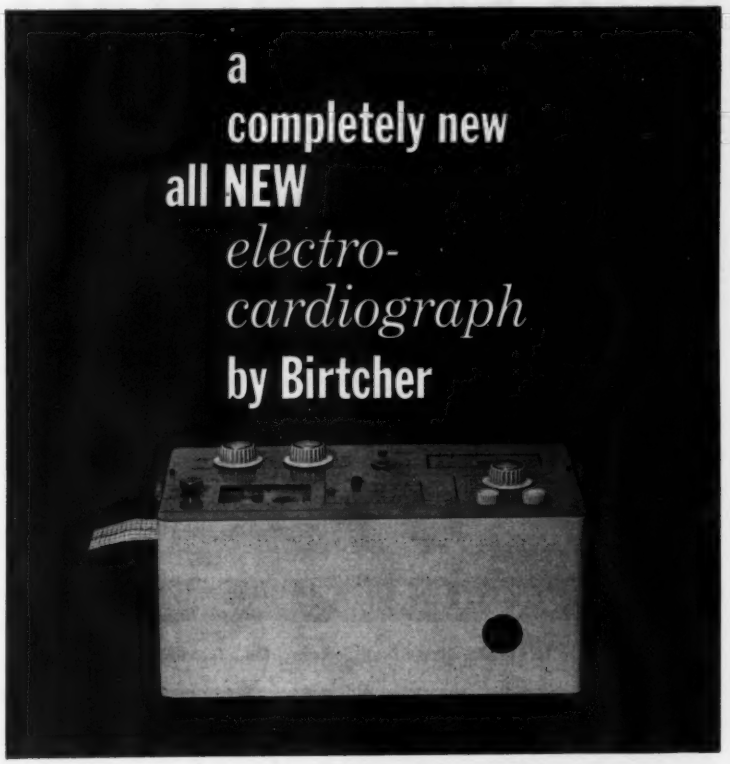
I should recommend, as another important phase of planning, the development of an education program that would prepare every citizen for an epidemic. On this score, I might suggest that we begin at home.

As for educational materials, I feel it is necessary to have a special joint committee, with representatives of organized medicine on it, to appraise the various educational materials that might be sent out to the public. In the beginning of the Asian influenza epidemic we were afraid of overselling and creating a panic. We were also afraid of creating a greater demand for vaccine than we could supply. A joint committee decided then, and should decide in the future, the quantity and timing of information.

Future epidemics could be handled more easily if local communities were organized, with certain variations to fit particular situations, very much like the States. Some community groups, of course, are already organized. Local health groups, such as health departments, medical societies, nurses' associations, and pharmaceutical associations, and voluntary health agencies, such as the Red Cross and civil defense groups, are examples. But there are other groups

*Reprinted from *Public Health Reports*, February 1958.

†Dr. Shanholtz is the State health commissioner for Virginia. He is also secretary of the Association of State and Territorial Health Officers. This paper is based on comments at a symposium on Asian influenza held by the American College of Preventive Medicine and the health officers' section at the 1957 meeting of the American Public Health Association in Cleveland, Ohio.



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that could be organized more effectively; I mean those working in education, industry, and community affairs.

It might also be well to consider the reservoir of retired, inactive nurses that could be used more effectively. The Red Cross and civil defense agencies have listed them. I feel that we ought to have these nurses on a standby basis where they might assist in an emergency.

Other resources could be tapped. An epidemic calls into being a vital need for additional transportation and clerical personnel and emergency telephone services. It might also be worthwhile to consider providing nursery care for children of graduate nurses who are called to active duty.

My final recommendation concerns a better means of allocating vaccines, especially when the supply is far smaller than the demand. In the 1957 influenza epidemic, many people wanted vaccine and wanted to be first. Some managed to get vaccine in spite of priority grouping and advice. And some large groups received vaccine ahead of any classification. Some of the ensuing anxiety may be attributed to overeducation, but my own feeling is that much of the fear was engendered by a memory of the 1918 epidemic. In any case, a more coherent system of allocation is needed.

These are some of the lessons we have learned, as I see it, from the Asian influenza epidemic. Working together has been a very good exercise for all of us. We have learned again, above everything else, that a united, cooperative effort on the part of health officials and practicing physicians is all important for success in any endeavor in the field of public health services.

Books received

Books received for review during the period from February 5 to March 5, are listed below. Reviews will be published as space permits.

CURRENT THERAPY 1958. Latest Approved Methods of Treatment for the Practicing Physician. Edited by Howard F. Conn, M.D. Cloth. Pp. 827. Price $12.00. W. B. Saunders Company, W. Washington Square, Philadelphia 5, 1958.

ULCERATIVE COLITIS. By Harry E. Bacon, B.S., M.D., Sc.D., LL.D., F.A.C.S., F.A.P.S., Professor and Head of Department of Proctology, Temple University Medical Center, Philadelphia; President, American Board of Proctology; Diplomate, American Board of Surgery and American Board of Proctology; Honorary Fellow, Royal Society of Medicine, Philippine College of Surgeons, international College of Surgeons, Brazilian College of Surgeons. Foreword by Alton Ochsner, B.A., M.D., Sc.D., F.A.C.S., F.A.P.S. (Hon), Professor of Surgery, Tulane University School of Medicine; Director of Surgery, Ochsner

Clinic and Ochsner Foundation Hospital, New Orleans, La.; Founder Member, American Board of Surgery; Past President American College of Surgeons and American Cancer Society. With Contributions by Paul T. Carroll, B.S., M.D., Former Resident in Proctology, Temple University Medical Center, Philadelphia. Chapter on Anesthesia by Leroy W. Krumperman, M.D., Professor and Head of Department of Anesthesiology, Temple University Medical Center, Philadelphia; Diplomate, American Board of Anesthesiology. Cloth. Pp. 395, with illustrations. Price $15.00. J. B. Lippincott Company, E. Washington Square, Philadelphia 5, 1958.

SPINAL ANESTHESIA. By John B. Dillon, B.S., M.S., M.D., Professor of Surgery and Chief of the Division of Anesthesia, Department of Surgery, University of California Medical Center, Los Angeles; Consulting Anesthesiologist to the Wadsworth General Hospital, Veterans Administration Center, Los Angeles, Huntington Memorial Hospital, Pasadena, Saint Johns Hospital, Santa Monica, Cedars of Lebanon Hospital, Los Angeles, Los Angeles County Hospital, Los Angeles; Formerly Associate Clinical Professor of Surgery (Anesthesia), University of Southern California and The College of Medical Evangelists, Los Angeles; Chief of the Department of Anesthesia, Los Angeles County Hospital. Paper. Pp. 61, with illustrations. Price $3.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1958.

STRABISMUS OPHTHALMIC SYMPOSIUM II. Edited by James H. Allen, M.D., Professor and Chairman of the Department of Ophthalmology, School of Medicine, The Tulane University of Louisiana; Chief of Ophthalmology, Hutchinson Clinic; Senior Visiting Surgeon and Head of the Department of Ophthalmology, Tulane Unit, Charity Hospital of New Orleans; Senior Surgeon and Director of Training Program in Ophthalmology, New Orleans Eye, Ear, Nose and Throat Hospital, New Orleans. Cloth. Pp. 552, with illustrations. Price $16.00. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1958.

MODERN PHARMACOLOGY AND THERAPEUTICS. By Ruth D. Musser, A.B., M.S., Instructor in Pharmacology, School of Medicine and School of Nursing, University of Maryland, Baltimore; and Joseph G. Bird, M.D., Ph.D., Clinical Pharmacologist, Sterling-Winthrop Research Institute, Rensselaer, New York. Cloth. Pp. 828, with illustrations. Price $6.75. The Macmillan Company, Publishers, 60 Fifth Avenue, New York 11, 1958.

HEART DISEASE AND PREGNANCY. Physiology and Management. By C. Sidney Burwell, M.D., Samuel A. Levine Professor of Medicine, Harvard University; Visiting Physician, Boston Lying-in Hospital; Physician, Peter Bent Brigham Hospital; and James Metcalfe, M.D., Associate in Medicine, Harvard University; Associate Physician, Boston Lying-in Hospital; Associate in Medicine, Peter Bent Brigham Hospital. Cloth. Pp. 338, with illustrations. Price $10.00. Little, Brown & Company, 34 Beacon St., Boston 6, 1958.

THE ESSENCE OF SURGERY. By C. Stuart Welch, M.S., M.D., Ph.D., Professor of Surgery, Albany Medical College of Union University; and Samuel R. Powers, Jr., A.B., M.D., M.Sc.D., Professor of Experimental Surgery, Albany Medical College of Union University. Cloth. Pp. 320, with illustrations. Price $7.00. W. B. Saunders Company, W. Washington Square, Philadelphia 5, 1958.

THE PRACTICE OF INFECTIOUS DISEASE. By Louis Weinstein, Ph.D., M.D., Professor of Medicine, Tufts University School of Medicine; Lecturer on Infectious Disease, Harvard Medical School; Chief of the Infectious Disease Service and Senior Physician, Medical Service, New England Center Hospital, Boston. Cloth. Pp. 501. Price $8.50. McGraw-Hill Book Company, 330 W. 42nd St., New York 36, 1958.

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PRACTICAL PEDIATRICS. By R. Cannon Eley, M.D., Assistant Clinical Professor of Pediatrics, Harvard University, Cambridge, Mass.; Chief of Pediatric Service, Mount Auburn Hospital, Cambridge, Mass.; Senior Consultant in Pediatrics, U.S. Naval Hospital, Chelsea, Mass.; and Benjamin Kramer, M.D., Director of Pediatric Services, Maimonides Hospital, Brooklyn, New York; Clinical Professor of Pediatrics (Emeritus), University of the State of New York, Downstate Medical Center; Pediatric Consultant, The Jewish Hospital, Brooklyn. Cloth. Pp. 309, with illustrations. Price $7.00. McGraw-Hill Book Company, 330 W. 42nd St., New York 36, 1958.

PREVENTIVE MEDICINE FOR THE DOCTOR IN HIS COMMUNITY. An Epidemiologic Approach. By Hugh Rodman Leavell, M.D., Dr. P.H., Professor of Public Health Practice; Head of the Department of Public Health Practice, Harvard School of Public Health; and E. Gurney Clark, M.D., Dr. P.H., Professor of Epidemiology and Head of Division of Epidemiology, School of Public Health and Administrative Medicine of the Faculty of Medicine, Columbia University. Ed. 2. Cloth. Pp. 689, with illustrations. Price $10.00. McGraw-Hill Book Company, 330 W. 42nd St., New York 36, 1958.

ABDOMINAL OPERATIONS BY THE VAGINAL ROUTE. By Paul Werner, M.D., Formerly Professor of Gynecology and Obstetrics, University of Vienna; and Julius Sederl, M.D., Vienna, Austria. Translated by L. M. Szamek, M.D., Copiague, Long Island, New York. With a Foreword by Richard W. TeLinde, M.D. Cloth. Pp. 165, with illustrations. Price $9.00. J. B. Lippincott Company, E. Washington Square, Philadelphia 5, 1958.

HEART DISEASE—Cause, Prevention, and Recovery. By Philip S. Chen, Ph.D., Professor of Chemistry and Chairman of Division of

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Natural Sciences, Atlantic Union College; with the assistance on Part I of Philip S. Chen, Jr., Ph.D. Cloth. Pp. 189, with illustrations. Price $3.00. The Chemical Elements, Box 315, South Lancaster, Mass. 1958.

VERTIGO AND DIZZINESS. By Bernard J. Alpers, M.D., Sc.D. (Med.), Professor and Head of the Department of Neurology, Jefferson Medical College, Philadelphia. Cloth. Pp. 120, with illustrations. Price $5.00. Grune & Stratton, 381 Fourth Ave., New York 16, 1958.

GENERAL PATHOLOGY. Based on Lectures Delivered at the Sir William Dunn School of Pathology, University of Oxford. Edited By Sir Howard Florey, Professor of Pathology. Ed. 2. Cloth. Pp. 932, with illustrations. Price $16.00. W. B. Saunders Company, W. Washington Square, Philadelphia 5, 1958.

THE FUNCTIONAL ORGANIZATION OF THE DIENCEPHALON. By W. R. Hess. Professor of Physiology, Emeritus, University of Zurich, Zurich, Switzerland. Edited by John R. Hughes, M.A. (Oxon.), Ph.D., National Institutes of Health, Bethesda, Md.; Presently Chief of Neurophysiology and E.E.G., Meyer Memorial Hospital, and Assistant Professor of Neurophysiology, Buffalo Medical School, Buffalo, New York. Cloth. Pp. 180, with illustrations. Price $7.00. Grune & Stratton, 381 Fourth Ave., New York 16, 1957.

AIDS TO PUBLIC HEALTH. By Llywelyn Roberts, M.D. (Hygiene), M.R.C.P., D.P.H., Medical Officer of Health, City of Sheffield. Ed. 8. Cloth. Pp. 335, with illustrations. Price $3.00. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

AIDS TO ANAESTHESIA By Victor Goldman, F.F.A.R.C.S., D.A., L.R.C.P., M.R.C.S., Senior Lecturer in Anaesthetics, Institute of Dental Surgery, University of London; Consulting Anaesthetist, Queen Mary's Hospital for the East End, Eastman Dental Hospital, and Battersea General Hospital, London. Ed. 4. Cloth. Pp. 359, with illustrations. Price $3.50. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

AIDS TO OPHTHALMOLOGY. By P. McG. Moffatt, M.D. (Lond.), M.R.C.P., F.R.C.S. (Eng.), D.O.M.S.; Consultant Ophthalmic Surgeon and Lecturer, Moorfields Eye Hospital, Hammersmith, West London and St. Mark's Hospital Groups; Lecturer Post-Graduate Medical School; Recognized teacher of the London University; Senior Ophthalmic Consultant and Adviser. London County Council Central Medical Staff. Ed. 11. Cloth. Pp. 282, with illustrations. Price $3.00. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

A THERAPY FOR ANXIETY TENSION REACTIONS. By Gerhard B. Haugen, M.D.; Henry H. Dixon, M.D.; and Herman A. Dickel, M.D. Cloth. Pp. 110. Price $3.50. The Macmillan Company, 60 Fifth Ave, New York 11, 1958.

OPERATIVE SURGERY. Volume 6: Hand; Amputations; Plastic Surgery; Gynecology and Obstetrics. Under the General Editorship of Charles Rob, M.C., M.Chir., F.R.C.S., Professor of Surgery, St. Mary's Hospital, London; and Rodney Smith, M.S., F.R.C.S., Surgeon, St. George's Hospital, London. Cloth. Pp. 123, with illustrations. Price $19.50. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1958.

A HANDBOOK ON DISEASES OF CHILDREN including Dietetics and the Common Fevers. By Bruce Williamson, M.D. Edin., F.R.C.P. Lond., Physician, Children's Department, Royal Northern Hospital, London; Physician, Children's Hospital, Northaw; Physician, Prince of Wales General Hospital, London; Physician, Barnet General Hospital; Physician, Enfield War Memorial Hospital; Lecturer, North London Post-Graduate Institute. Ed. 8. Paper. Pp. 483, with illustrations. Price $6.00. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1957.

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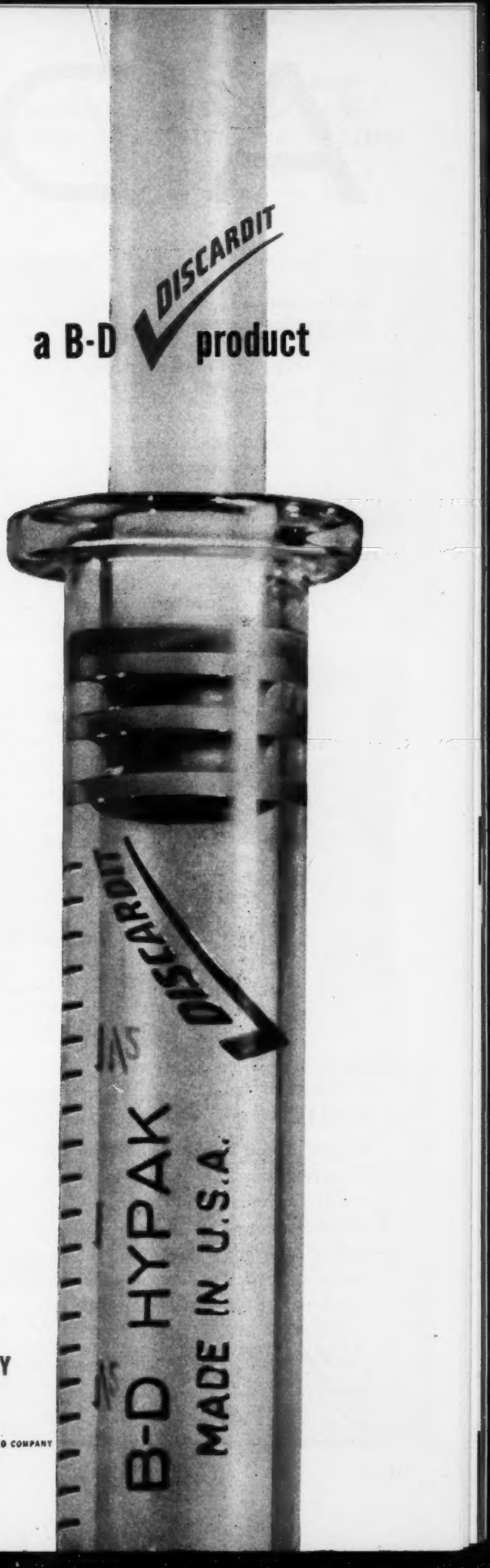

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(1) Marks, M. M.: Clin. Med. 4:151, 1957.

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(1) Griffith, J. Q., Jr.; Krewson, C. E, and Naghski, J.: Rutin and Related Flavonoids, Easton, Pa., Mack Publishing Company, 1955. (2) Griffith, J. Q., Jr.; DeEds, E; Naghski, J., and Krewson, C. E: A.M.A. Arch. Int. Med. 94:1037, 1954. (3) Griffith, J. Q., Jr.: The Treatment of Hypertension, Philadelphia, W. B. Saunders Company, M. Clin. No. America, Nov., 1954, p. 1717. (4) Griffith, J. Q., Jr.: Am. Pract. & Digest Treat. 7:2012, 1956.

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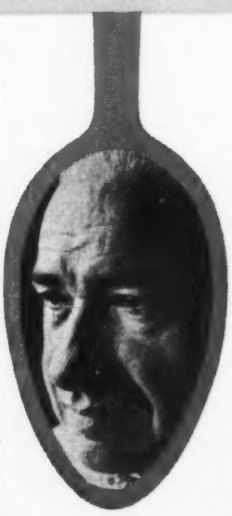

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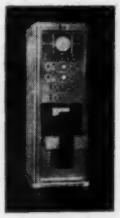

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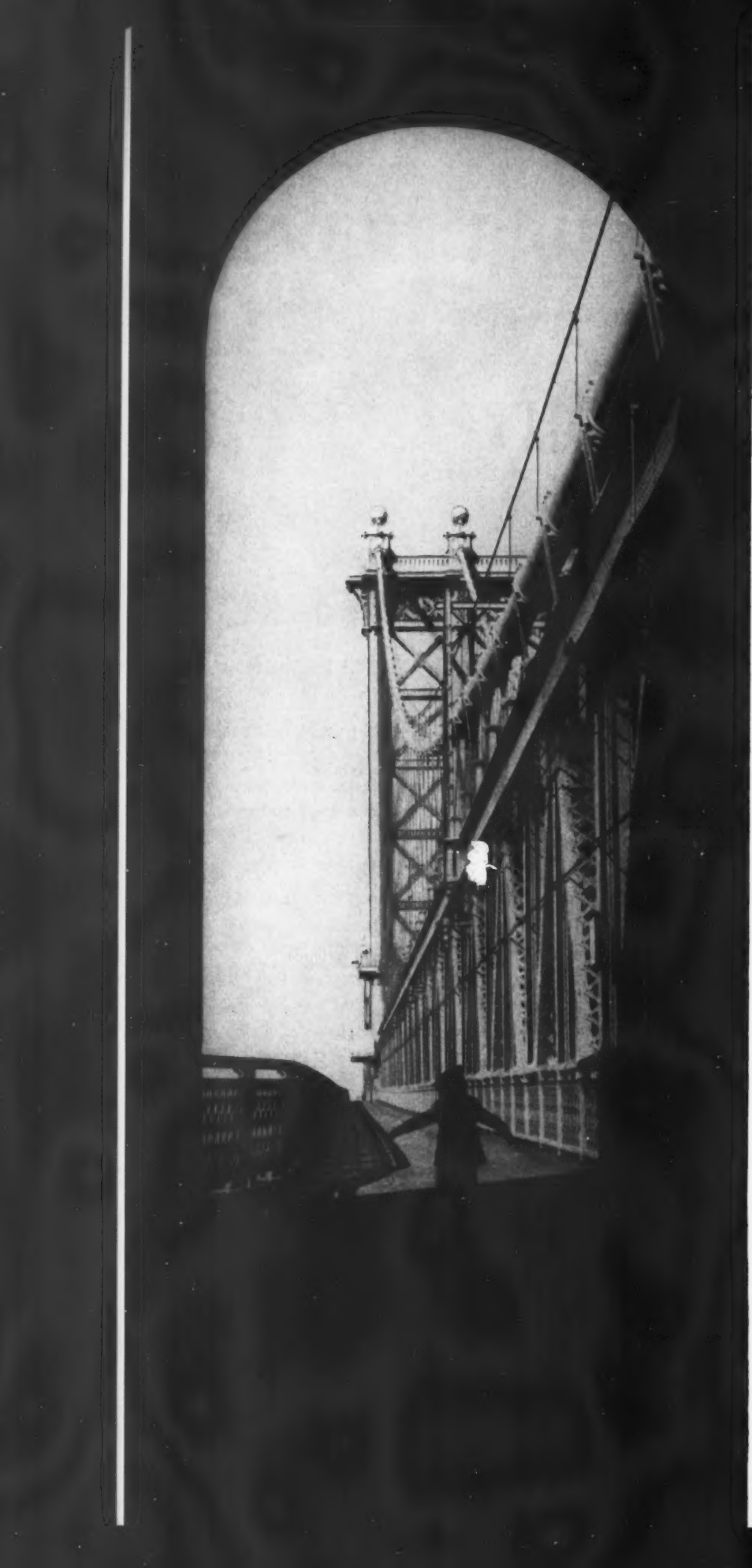

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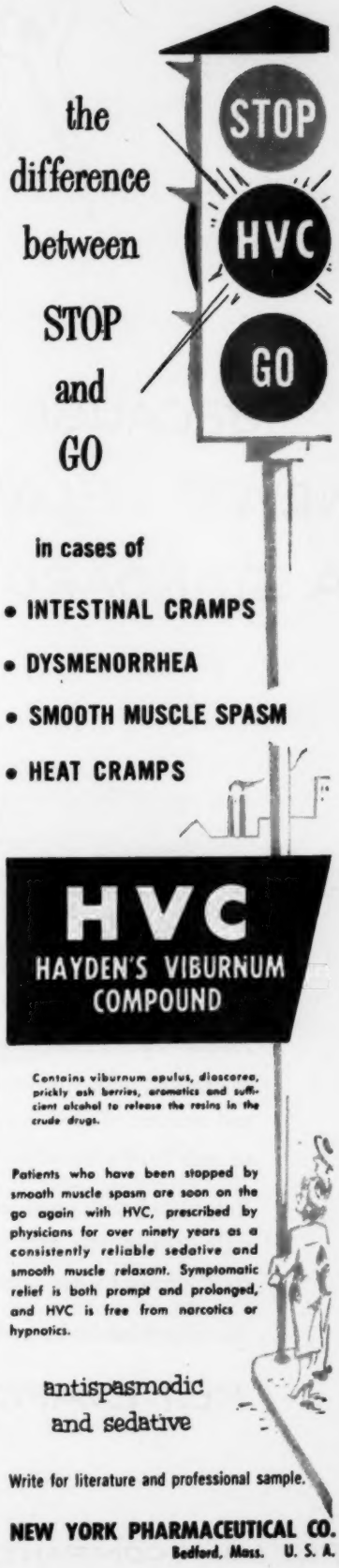
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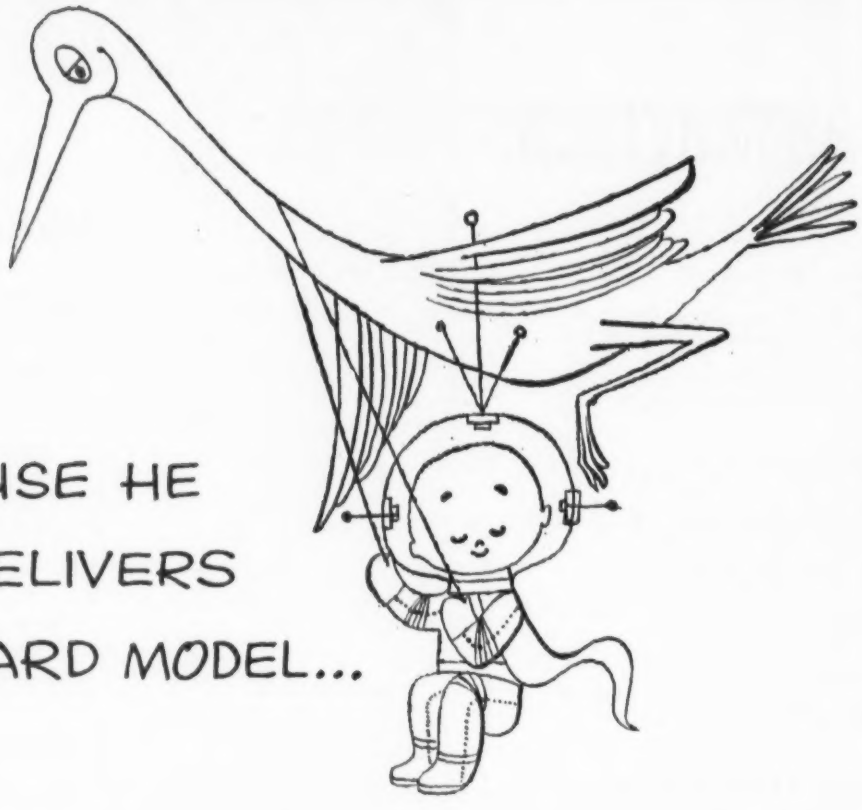

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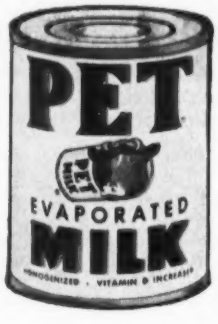

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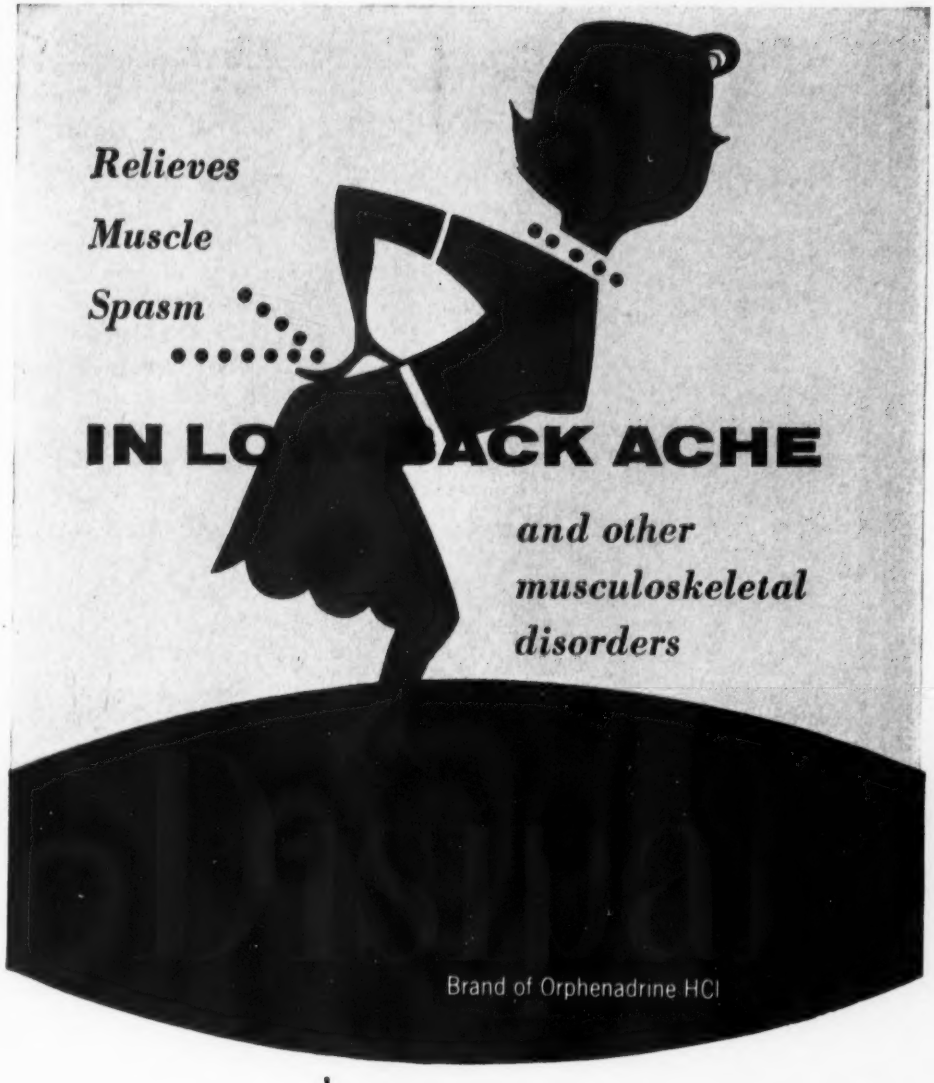

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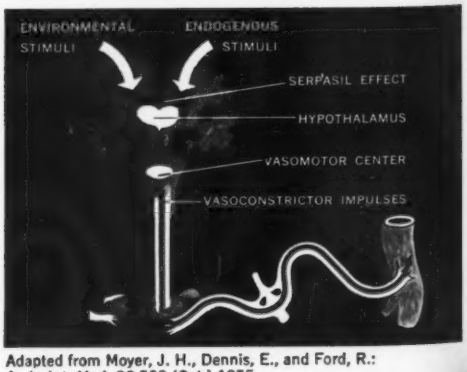

Adapted from Moyer, J. H., Dennis, E., and Ford, R.: Arch. Int. Med. 96:530 (Oct.) 1955.

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